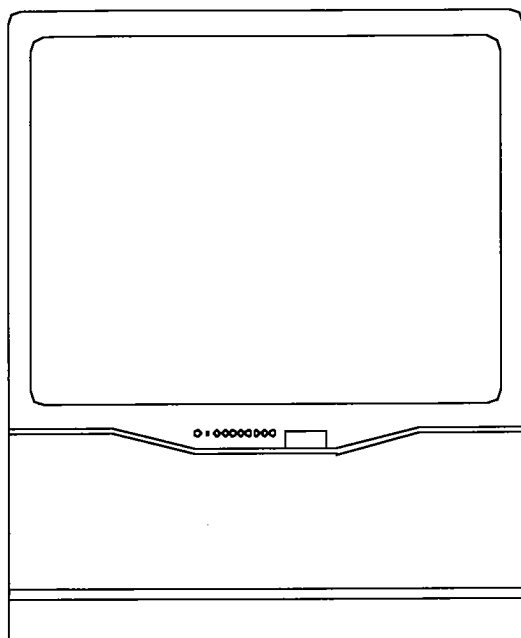




# Service Manual

PROJECTION TELEVISION  
VZ4 CHASSIS



**MODEL**  
**VS-45501/VS-45502/VS-45501A**  
**VS-50501/VS-50502/VS-50501A**

## CAUTION:

Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" AND "PRODUCT SAFETY NOTICE" in this manual.

## SPECIFICATIONS

- |  |  |
|--|--|
| • <b>Power Input</b> : AC 120V, 60Hz   | • <b>High Voltage</b> : 32.0kV (at 0A)   |
| • <b>Power Consumption</b> : 260W  | • <b>Speaker</b> : 4" round type 2 pcs.  |
| • <b>Frequency Range</b> : VHF 54 ~ 470MHz<br>UHF 470 ~ 806MHz   | • <b>Cabinet Dimensions</b> : [VS-45501/ 45502/V45501A]<br>: 39.5"(W) X 49"(H) X 23.4"(D)<br>: [VS-50501/50502/50501A]<br>: 43.5"(W) X 51.2"(H) X 24.3"(D)   |
| • <b>Antenna Input</b> : VHF/UHF 75 $\Omega$ unbalanced<br>Single axis input   | • <b>Weight</b> : [VS-45501/45502/45501A] 190 lbs<br>[VS-50501/50502/50501A] 195.8 lbs   |
| • <b>CRT</b> : [VS-45501/45502] [VS-45501A]<br>180DLB22 (R) 180DLB22 (R)<br>180DLB22 (G) 180DLB22 (G)<br>180DLB22 (B) 180DLB22 (B) | • <b>Input Level</b> : VIDEO IN JACK (RCA Type)<br>1.0Vp-p 75 $\Omega$ unbalanced<br>: AUDIO IN JACK (RCA Type)<br>-3 dBm 43k $\Omega$ unbalanced<br>: S-VIDEO IN JACK<br>(Y/C separate type)<br>Y: 1.0 Vp-p C: 0.286Vp-p(BURST)<br>75 $\Omega$ unbalanced |
| [VS-50501] [VS-50501A]<br>P16LJK01RJA (R) P16LHV08RJA (R)<br>P16LJK01HKA (G) P16LHV08HKA (G)<br>P16LJK01BMB (B) P16LHV09BMB (B)    | • <b>Output Level</b> : VIDEO OUT JACK (RCA Type)<br>1.0Vp-p 75 $\Omega$ unbalanced<br>: AUDIO OUT JACK (RCA Type)<br>-3 dBm 4.7 K $\Omega$ unbalanced   |
| [VS-50502]<br>P16LFM00RFA (R)<br>P16LFM00HLA (G)<br>P16LFM00BMB (B)  |  |

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

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6100 Atlantic Blvd., Norcross, GA. 30071-1305

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## **INTRODUCTION**

This service manual provides service instruction for PTV Models: VS-45501, VS-45502, VS-45501A, VS-50501, VS-50502 and VS-50501A which use the VZ4 Chassis. Service personnel should read this manual thoroughly before servicing this chassis.

This service manual includes:

1. Assembly and disassembly instructions for the front and rear cabinet components
2. Servicing of the lenticular screen and fresnel lens.
3. Servicing printed circuit boards (PCBs).
4. CRT replacement procedure.
5. Electrical adjustments.
6. Chip parts replacement procedures.
7. Lead dress diagram.

The parts list section of this service manual includes:

1. Cabinet and screen parts.
2. Electrical parts.

Schematic and block diagrams of PTV Models: VS-45501, VS-45502, VS-45501A, VS-50501, VS-50502 and VS-50501A are included in this service manual for better understanding of the circuitry. PCB drawings are also included for easy location of parts and test points.

## **PRODUCT SAFETY NOTICE**

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading on the schematic diagram and on the parts list of this service manual, and by marking on the supplementary sheet for this chassis to be issued subsequently. Therefore, the replacement for any safety part should be identical in value and characteristics.

**SAFETY PRECAUTIONS**

**NOTICE:** Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

- WARNING:**
1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
  2. Do not install, remove or handle the picture tubes in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
  3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

**B. X-radiation warning**

The surface of the cathode ray tubes (CRTs) may generate X-Radiation, so take proper precautions when servicing. It is recommended that a lead apron be used for shielding while handling the CRT. Use this method if possible. When replacing the CRTs, use only the designated replacement part since it is a critical component with regard to X-Radiation. As noted above, no high voltage adjustments are provided. The high voltage specification is described on the cover page.

**C. Leakage current check**

Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

**1. Cold Check**

With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis should be a minimum of 1Mega Ohm. Any resistance below this value indicates an abnormal condition and requires corrective action.

**2. Hot Check**

Use the circuit in Figure 1 to perform the hot check test.

1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. The leakage current should not be more than 0.5 milliamperes (mA).

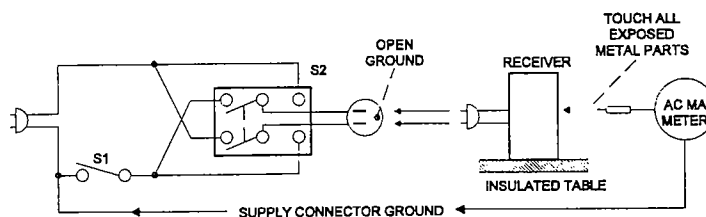
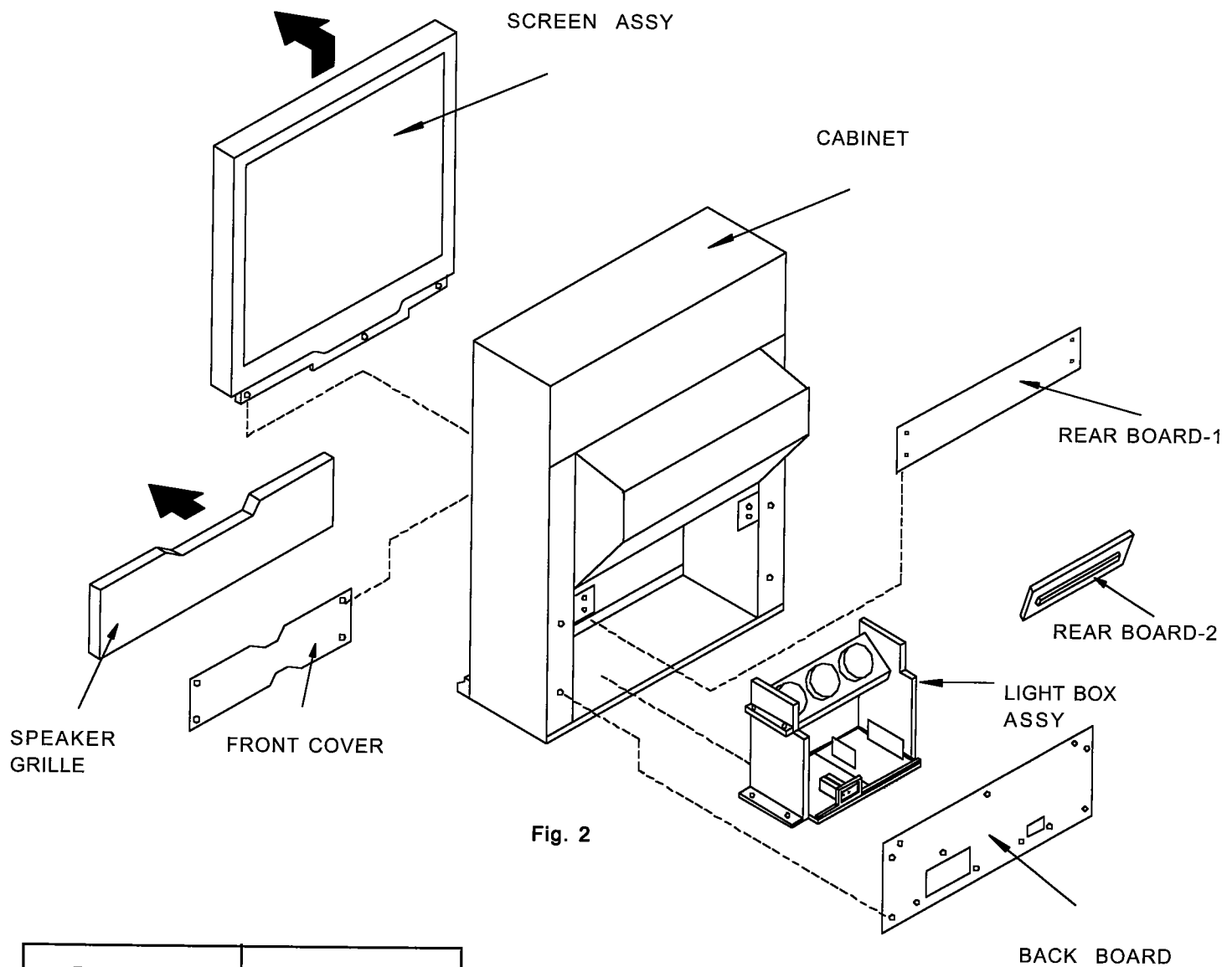


Figure 1

**DISASSEMBLY/ FRONT AND REAR CABINET COMPONENTS**

\*Refer to PARTS LIST for Part Numbers



| Parts Name     | Number of Screws |
|----------------|------------------|
| Screen Assy    | 3                |
| Front Cover    | 4                |
| Rear Board-1   | 4                |
| Rear Board-2   | 2                |
| Back Board     | 12               |
| Light Box Assy | 8                |

Table 1-2

## SERVICING PCBs

### PCB Locations

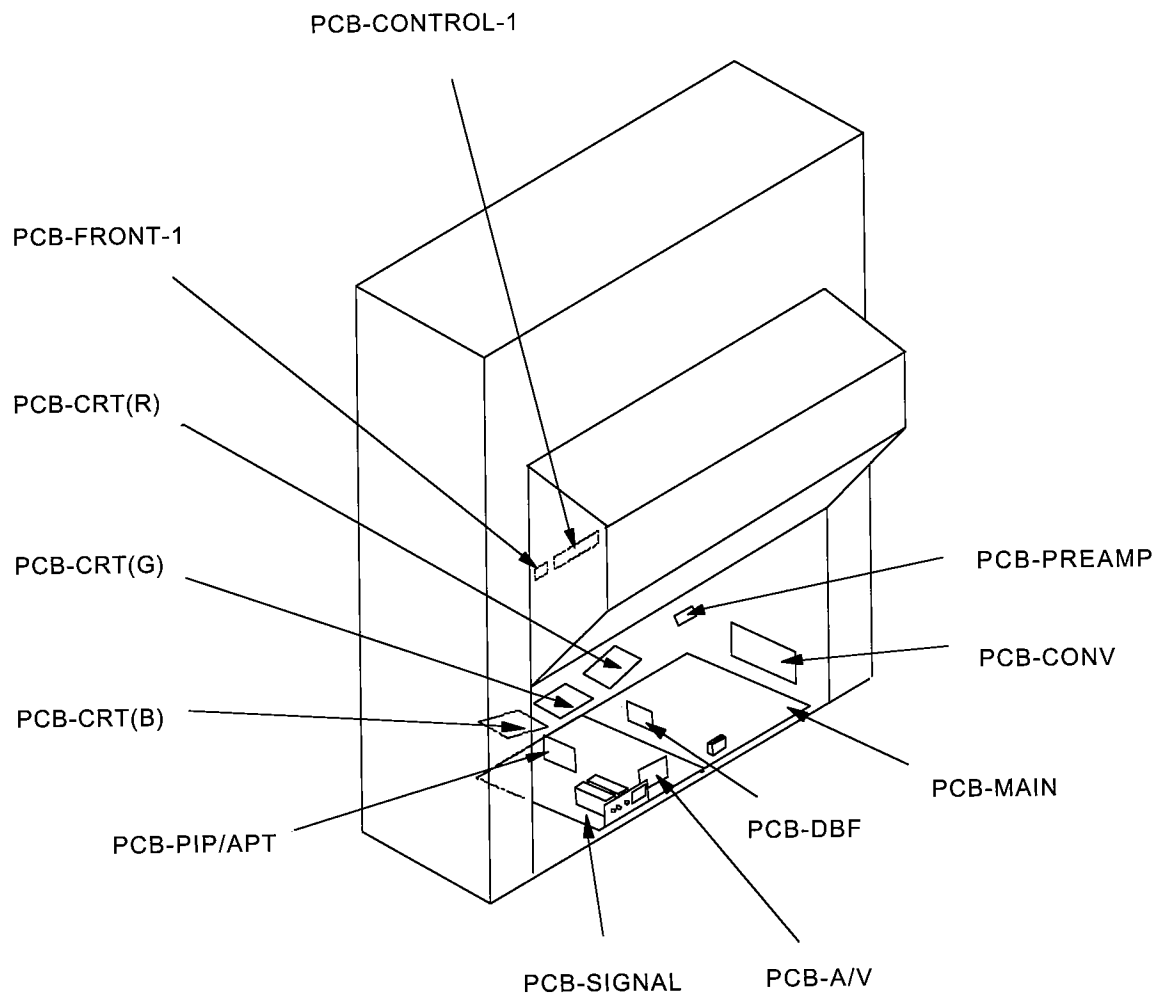


Fig. 3

### Extension Cord Jigs Table

When servicing PCBs, use the Extension Cord Jigs for easier access.

| PRINTED CIRCUIT BOARD | CONNECTOR              | PART NUMBER |
|-----------------------|------------------------|-------------|
| DBF                   | DV (3 PIN)             | 859C431060  |
| DBF                   | DW (5 PIN)             | 859C432060  |
| DBF                   | DU (7 PIN)             | 859C431070  |
| PIP                   | GE (9 PIN), GF (9 PIN) | 859C432050  |
| A/V                   | GB (13 PIN)            | 859C432030  |
| A/V                   | GA (11 PIN)            | 859C432040  |

\* Extension Jigs for servicing of the PCB-Convergence are not listed as the existing leads are of sufficient length.

Table 2

## SERVICING OF THE LENTICULAR SCREEN AND FRESNEL LENS

### 1. Removal of the Lenticular Screen and Fresnel Lens

#### A. VS-45501/VS-50501

1. Remove the screen assembly as shown in figure 2.
2. Remove Frame Holder by removing 12 screws (a).
3. Remove Screen Holder by removing 6 screws (b).

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart using a slot type screw driver, and remove the pressure sensitive, double sided tape.

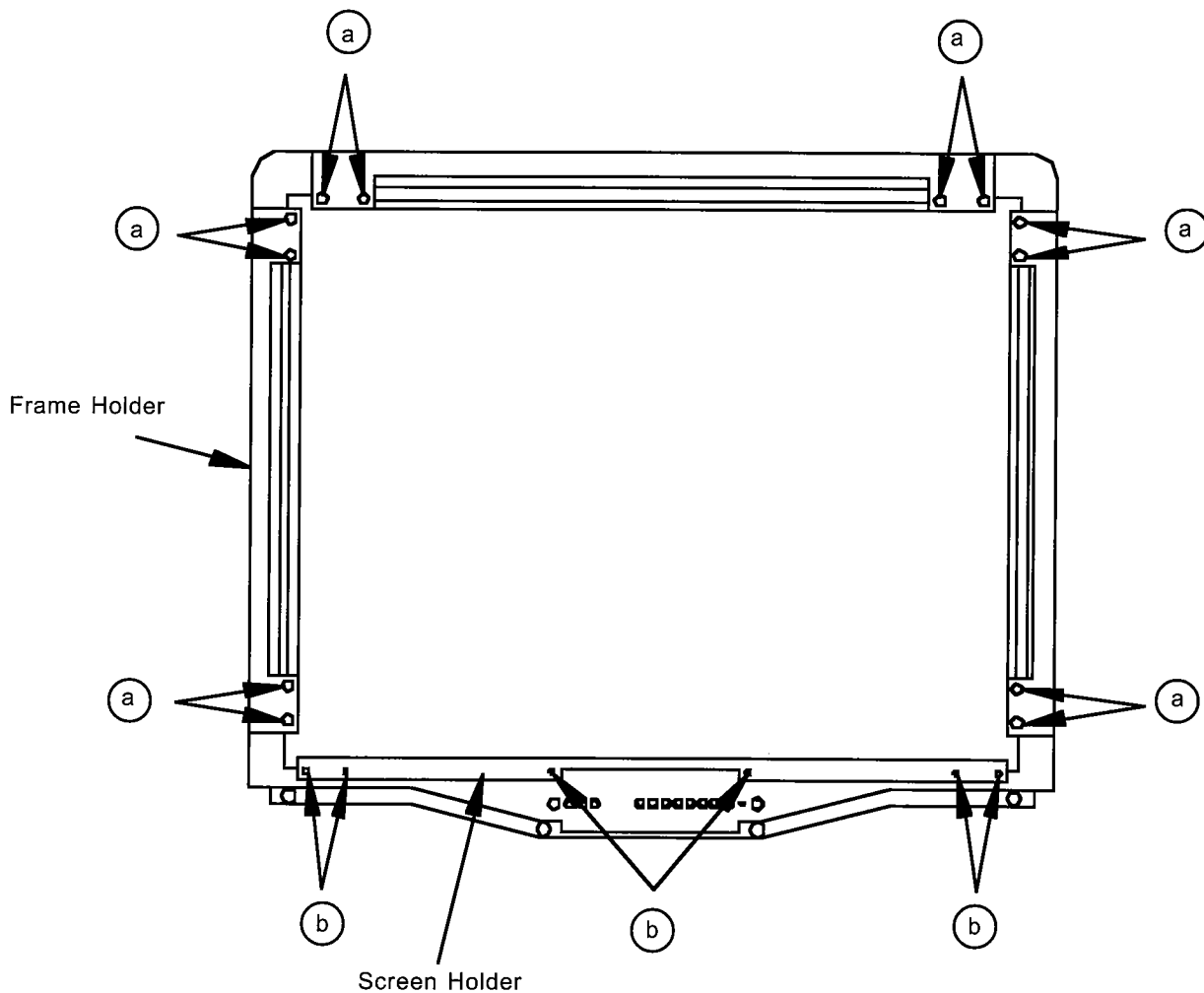


Figure 4-1

## 2. Installation of the Lenticular Screen and Fresnel Lens

**CAUTION:** WEAR GLOVES WHEN HANDLING THE LENTICULAR SCREEN AND THE FRESNEL LENS. THIS PREVENTS CUTS AND FINGER PRINTS. DO NOT PLACE THE FRESNEL LENS IN THE SUN. THIS MAY CAUSE FIRE AND HEAT RELATED INJURIES.

**Note:** Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity causes deformation of the Lenticular Screen and Fresnel Lens.

### A. VS-45501

1. Apply double coated tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens as shown in figure 4-2.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown in figure 4-2.

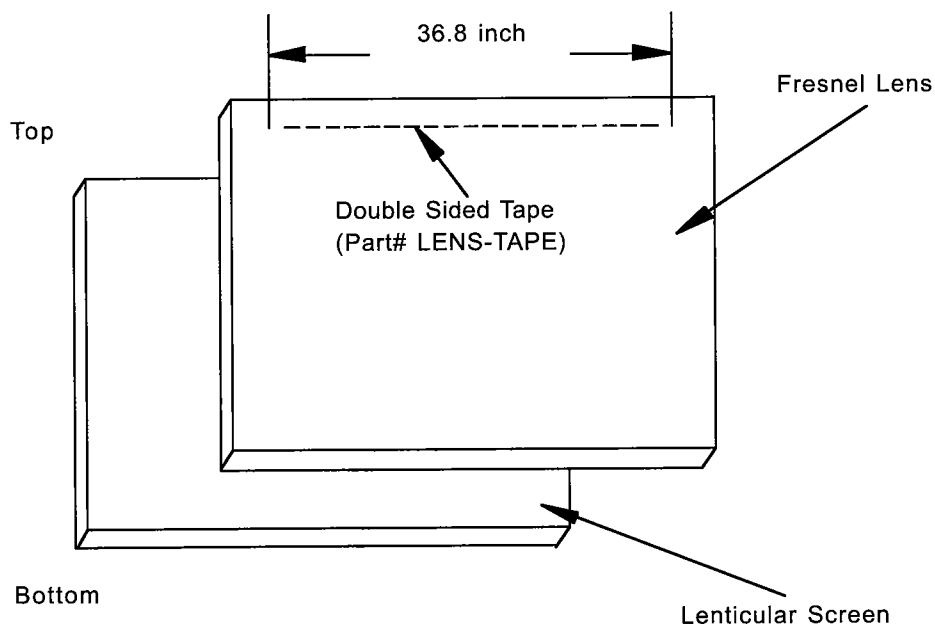


Figure 4-2



### 3. Installation of the Lenticular Screen and Fresnel Lens

**CAUTION:** WEAR GLOVES WHEN HANDLING THE LENTICULAR SCREEN AND THE FRESNEL LENS. THIS PREVENTS CUTS AND FINGER PRINTS.  
DO NOT PLACE THE FRESNEL LENS IN THE SUN. THIS MAY CAUSE FIRE AND HEAT RELATED INJURIES.

**Note:** Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity causes deformation of the Lenticular Screen and Fresnel Lens.

#### A. VS-50501

1. Apply double coated tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens as shown in figure 4-3.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown in figure 4-3.

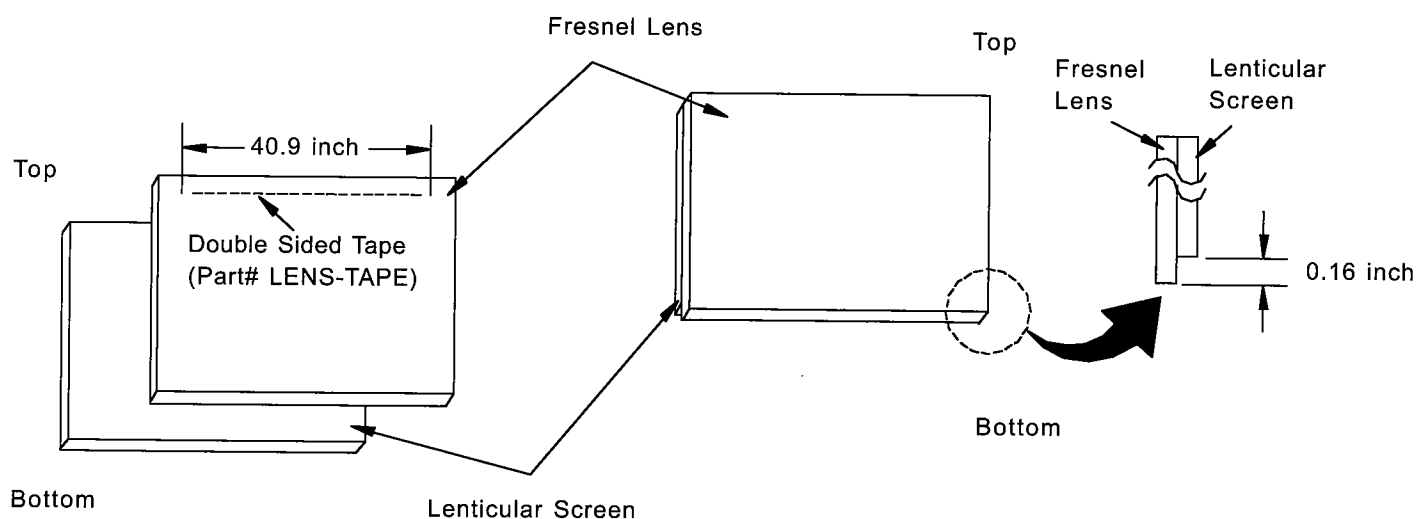


Fig. 4-3

## CRT REPLACEMENT

### 1. Removal of the CRT

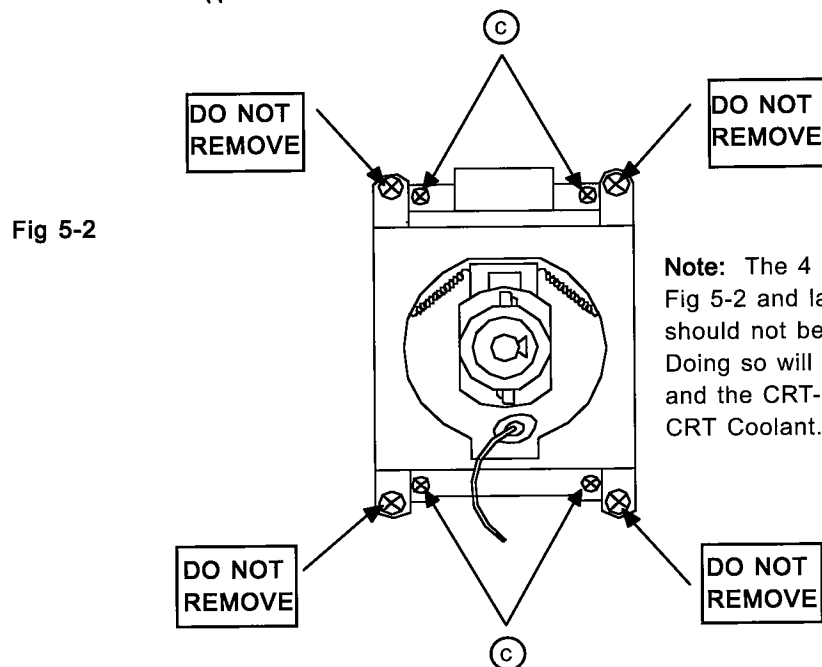
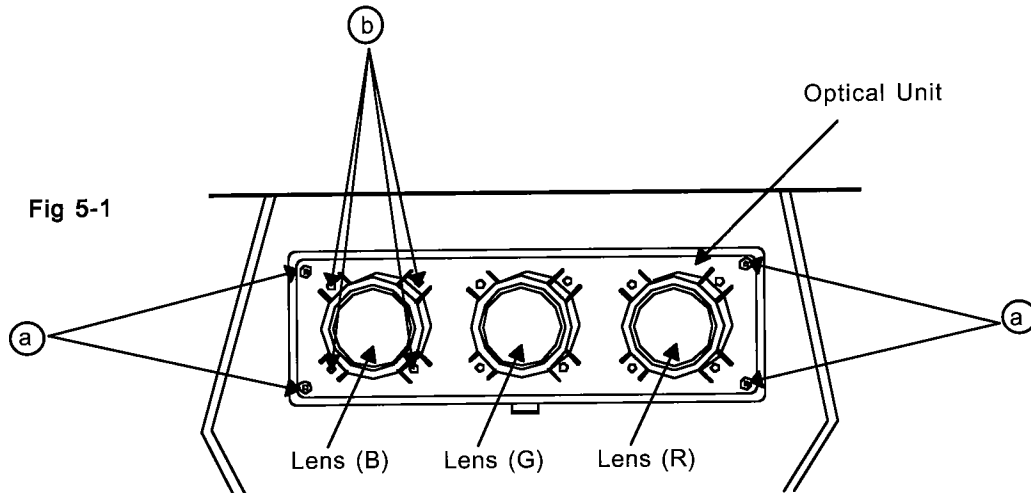
**CAUTION!** HIGH VOLTAGE SHOULD BE COMPLETELY DISCHARGED PRIOR TO ANODE CAP REMOVAL. SINCE ALL THREE CRTS RECEIVE HIGH VOLTAGE FROM THE FLYBACK TRANSFORMER, DISCHARGE EACH CRT BY SHORTING THE OPEN END OF EACH RESPECTIVE HIGH VOLTAGE CABLE TO CHASSIS GROUND.

**Note:** Refer to figures 2, and 2-1 when performing steps 1 through 4.

1. Remove the Speaker Grille.
2. Remove the Front Cover.
3. Remove the Screen Assy.
4. Remove the Back Board.
5. Remove the Anode Lead Wire from the Flyback Transformer.
6. Remove the PCB-CRT.
7. Remove 4 hex-screws "a" retaining the Optical Unit. [Fig. 5-1]
8. Remove 4 screws "b" retaining the Lens.

**Note:** DO NOT loosen the RED screws. Doing so will break the seal between the C-Element and the # 6 Lens, causing leakage of the CRT Coolant.

9. Remove 4 screws "c" retaining the CRT. [Fig. 5-2]
10. Remove the Deflection Yoke from the neck of the CRT. [Fig. 5-7]



## INSTALLATION OF THE CRT

**Note:** The replacement CRT is supplied as an assembly comprised of the CRT and the Inner Lens with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Fig. 5-3]

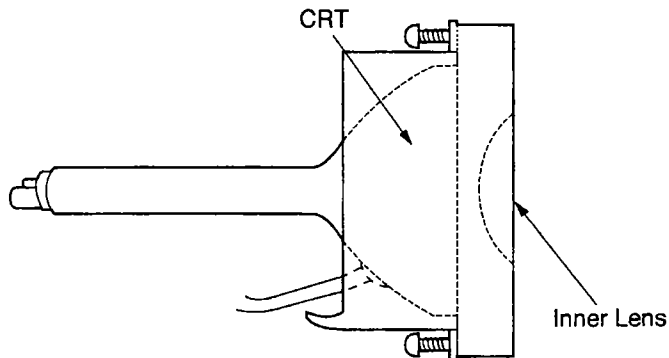


Fig 5-3

**Note:** The CRT fixing screws should not be loosened nor should they be removed. [Fig. 5-4]

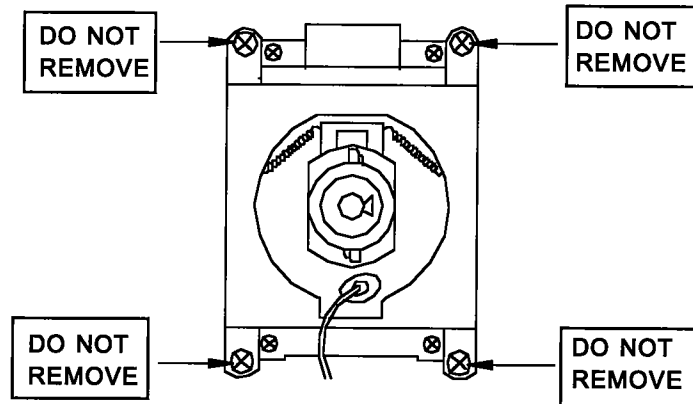


Fig 5-4

1. Carefully position the replacement CRT and fasten in place using 4 screws "d" shown in Fig. 5-6.

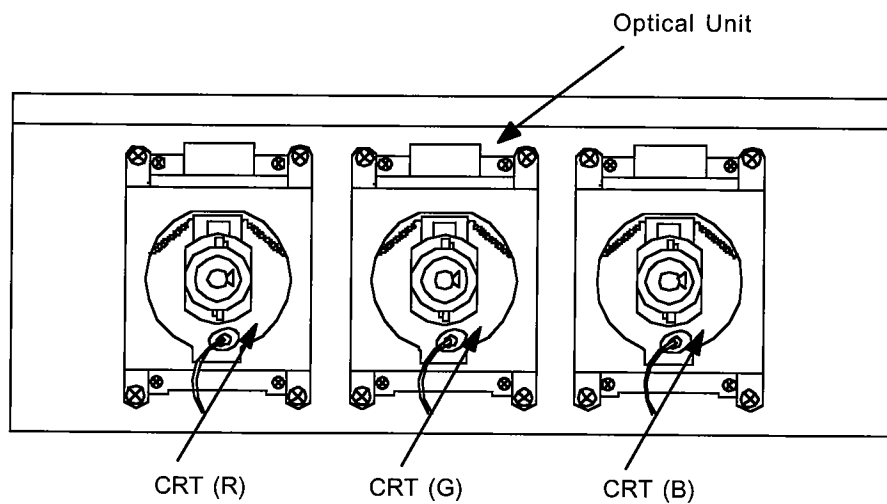


Fig 5-5

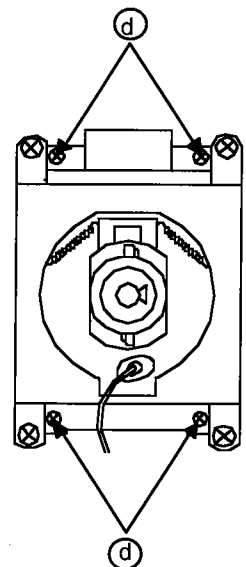


Fig 5-6

2. Install the Deflection Yoke on the CRT neck. [Fig. 5-7 ]
3. Install the Lens that was removed in steps 8 and 9 of Removal Of The CRT. [ Figs. 5-1 and 5-2 ]
  - a) Position the Lens so that the Label faces the direction shown in Fig. 5-8.
  - b) Install the mounting screws. Refer to Fig. 5-1.
4. Install the PCB-CRT.
5. Insert the Optical Unit into the Light Box Assembly.
6. Insert the Anode Lead Wire into the Flyback Transformer.
7. Re-clamp the Lead Wire in its original position.

**Note:** Refer to Lead Dress Diagrams pages 46-47.

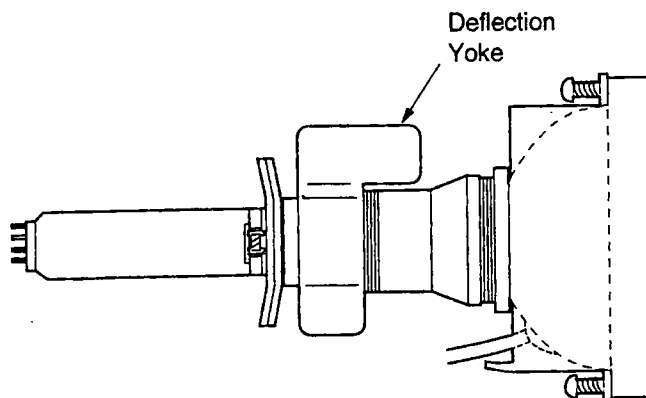


Fig 5-7

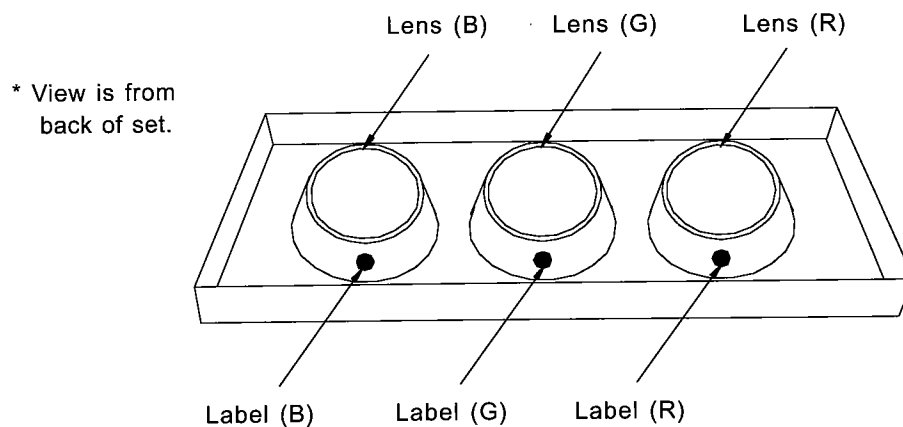


Fig 5-8

### Adjustment procedures after replacing the CRT(s)

CRT Cut Off / White Balance Adjustment  
 Static Convergence Adjustment  
 Dynamic Convergence Adjustment

**ELECTRICAL ADJUSTMENTS**

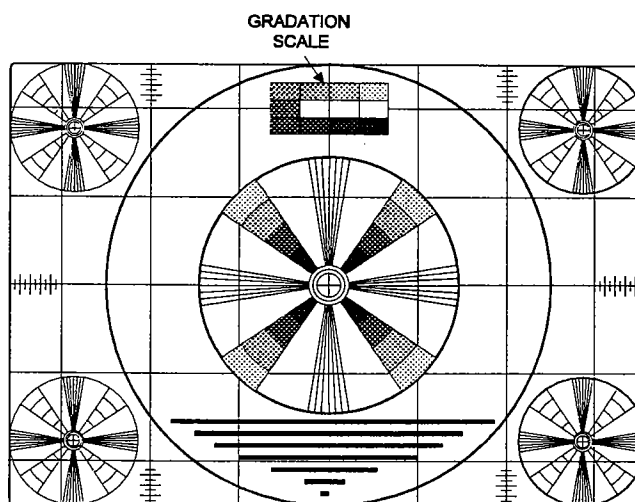
**Note:** Perform only the adjustments required.  
Do not attempt an alignment if proper equipment is not available.

**1. Measuring Equipment and Jigs**

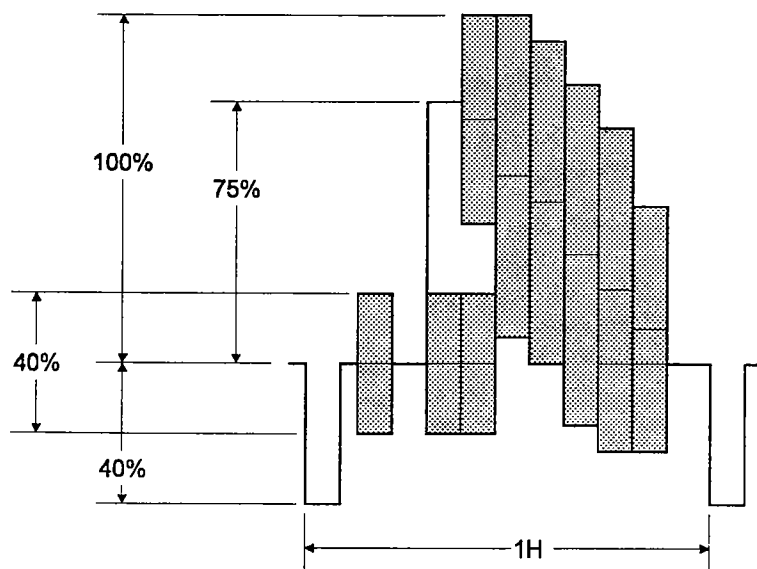
- \* Oscilloscope (Unless otherwise specified, use 10:1 probes)
- \* Signal Generator
- \* Frequency Counter
- \* Direct Current Voltmeter
- \* Sweep Generator.
- \* Direct Current Power Supply
- \* Multiplex Audio Signal Generator
- \* Direct Current Ampere Meter

**2. Test Signal****A. Monoscope Signal**

**Note:** Connect the unit to a VCR and play an \*alignment tape (Monoscope), if you do not have a monoscope signal source for adjustment.  
(\* Part Number: 859C568020)

**B. Color Bar Signal**

Use the color bar signal shown below, unless otherwise specified in this manual.

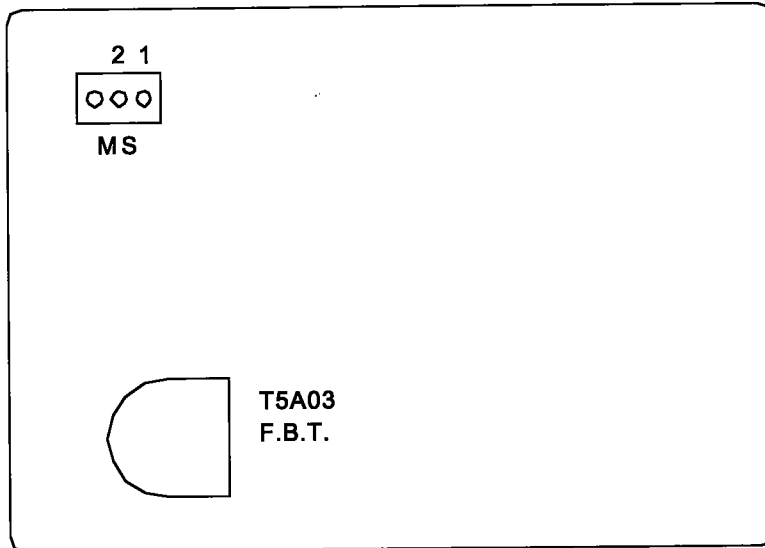


**Split-Field Color Bars (100% window)**

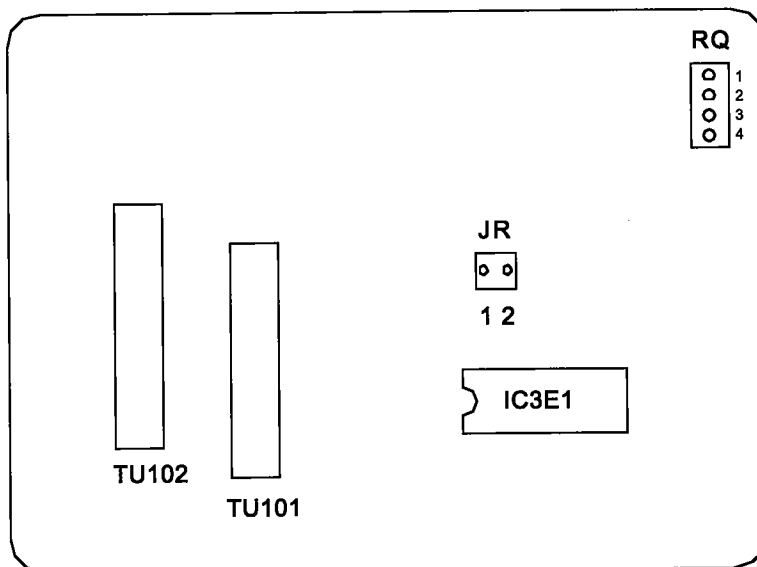
**Monoscope Signal**

### 3. Location of Test Points and Adjustments

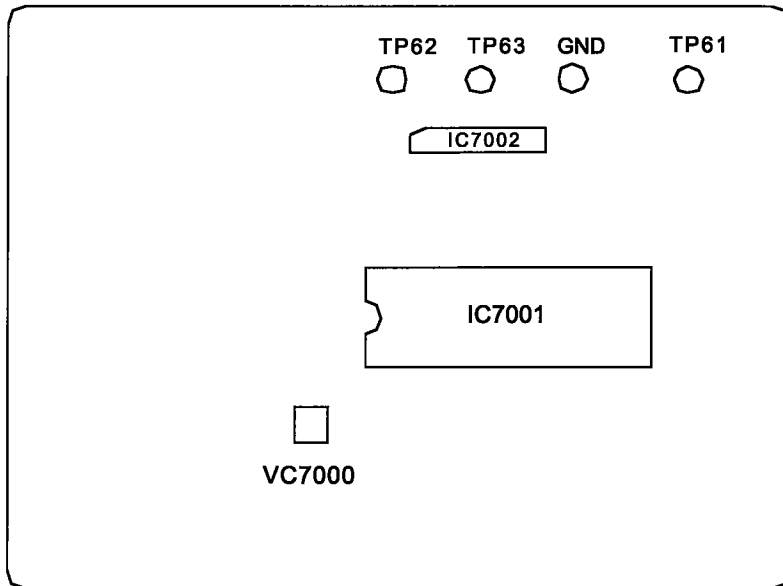
#### PCB-MAIN (COMPONENT SIDE)



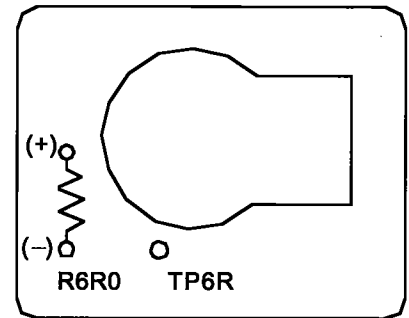
#### PCB-SIGNAL (COMPONENT SIDE)



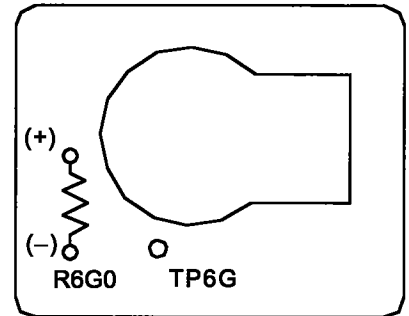
PCB-PIP/APT (COMPONENT SIDE)



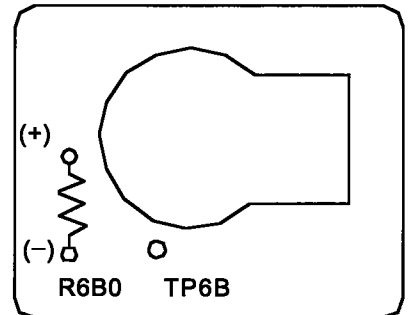
PCB-CRT (R)  
(COMPONENT SIDE)



PCB-CRT (G)  
(COMPONENT SIDE)



PCB-CRT (B)  
(COMPONENT SIDE)



#### 4. Option Menu Set Up

Follow the steps below for the Option Menu set up:

1. Set the receiver to the "TV" mode.
2. Select the "MENU" display by pressing the "MENU" button once.
3. Press the number buttons "2", "3", "5", "8" in sequence to select the "Option Menu" display.
4. Set the "Option Menu" as shown in the table below using the "ADJUST" and "ENTER" buttons.
5. Press the "MENU" button twice to return to normal viewing.

##### Option Menu

|                         |  |
|-------------------------|--|
| Initial                 |  |
| Hotel                   | : OFF  |
| Power Restore           | : OFF  |
| Antenna                 | : 2  |
| Input                   | : 3  |
| When Muting             | : ON   |
| Firmware Version Number | <input type="text"/> <input type="text"/> <input type="text"/> |

##### Initial Settings

| Initial Item    | Initial Setting | Initial Item     | Initial Setting  |
|-----------------|-----------------|------------------|------------------|
| INPUT           | TV              | TV CC            | When Muting      |
| RECEIVING CH    | CH 003          | PIP SOURCE       | TV               |
| TV / CATV       | CATV            | PIP POSITION     | Lower Right      |
| Q.V.            | CH 003          | VIDEO MUTE       | OFF              |
| CHANNEL MEMORY  | ALL CH (0.0)    | NAME THE INPUT   | ALL LABELS CLEAR |
| TV Lock         | OFF             | S.Q.V.           | ALL CH CLEAR     |
| Channel Lock    | OFF             | AUTO CLOCK       | ON               |
| LOCK CODE       | ----            | A/V NETWORK      | OFF              |
| VOLUME          | 30%             | SELECT LANGUAGE  | English          |
| AUDIO FUNCTIONS |                 | NAME THE CHANNEL | ALL LABELS CLEAR |
| Listen To       | STEREO          | SELECT MENU TYPE | Standard Menu    |
| Bass            | 50%             | Parental Lock    | Cancel           |
| Treble          | 50%             |                  |                  |
| Balance         | 50%             |                  |                  |
| Surround        | OFF             |                  |                  |
| Speaker         | ON              |                  |                  |
| Monitor Out     | Variable        |                  |                  |
| Level Sound     | OFF             |                  |                  |
| VIDEO FUNCTIONS |                 |                  |                  |
| TV IRIS         | OFF             |                  |                  |
| Tint            | 50%             |                  |                  |
| Color           | 50%             |                  |                  |
| Contrast        | 100%            |                  |                  |
| Brightness      | 50%             |                  |                  |
| Sharpness       | 50%             |                  |                  |
| Color Temp      | High            |                  |                  |
| Background      | Gray            |                  |                  |
| TV Instant Info | ON              |                  |                  |



## 5. Service Menu Set Up

Follow the steps below for the initial set up:

1. Select the "MENU" display by pressing the "MENU" button once.
2. Press the number buttons "1", "3", "7", "0" in sequence to select the "SERVICE MENU" display.
3. Press the "ADJUST" button to select "Initial."
4. Press "ENTER."

**NOTE:** At this time channel 3 is automatically selected.

**CAUTION:** DO NOT ACTIVATE E2 RESET AS THIS WILL RESET ALL ALIGNMENT DATA.

### Service Menu

|  |     |             |     |
|--|-----|-------------|-----|
| Initial  |     |             |     |
| E2 RESET   |     | 3 Dia:      | On  |
| Hotel:   | Off | Auto Clock: | On  |
| Power Restore:   | Off | Guide Plus: | Off |
| Antenna:   | 2   |             |     |
| Input:   | 3   |             |     |
| When Muting:   | On  |             |     |
| Firmware Version Number <input type="text"/> <input type="text"/> <input type="text"/> |     |             |     |

## 5. Circuit Adjustment Mode

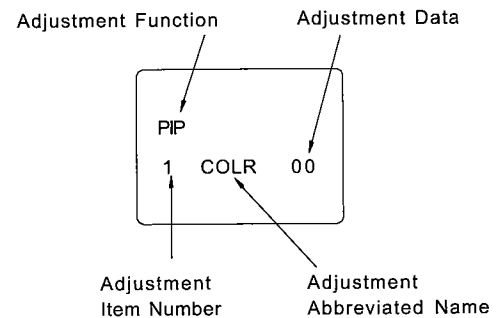
Except for the following, all adjustment items must be performed using the remote hand unit.

| Adj. Item | Description         |
|-----------|---------------------|
| 6         | Lens Focus          |
| 7         | Electrostatic Focus |

### A. Activating the Circuit Adjustment Mode

1. Press the "MENU" button on a remote hand unit.  
(The "MENU" display will appear.)
2. Press the number buttons "2", "3", "5", "7" in sequence.  
(The screen will change to the circuit adjustment mode.)

**Note:** Repeat steps 1 and 2 if circuit adjustment mode does not appear on screen.

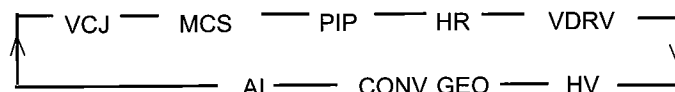


### B. Selection of adjustment Functions and Adjustment Items

To select an adjustment item in the circuit adjustment mode, first select the adjustment function that includes the specific adjustment item to be selected. Then, select the adjustment item.

Refer to the following pages for the listing of adjustment functions and adjustment items.

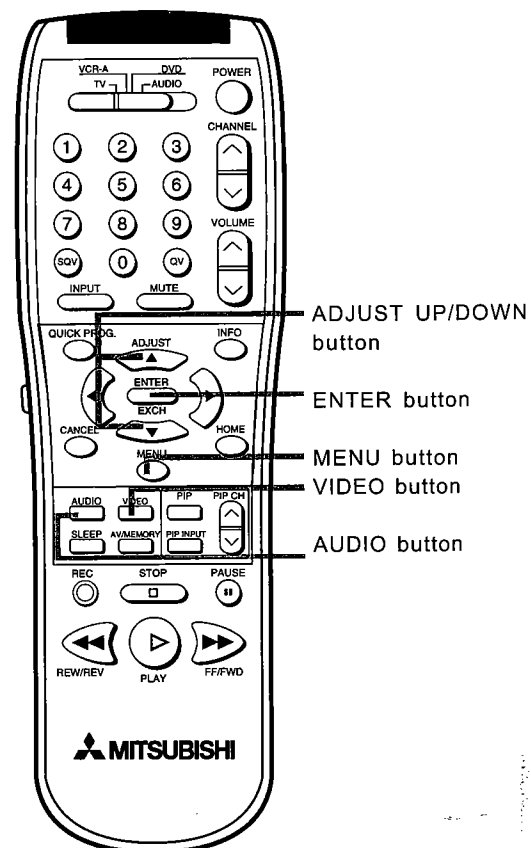
1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the adjustment function changes in the following sequence.



2. Press the "VIDEO" button to select a specific adjustment item. The adjustment item number increases each time the "VIDEO" button is pressed.

### C. Changing data

After selecting an adjustment item, use the 'ADJUST' button to change the adjustment data.



***D. Saving Adjustment Data***

Press "ENTER" to save the adjustment data in memory. The character display turns red for approximately one second in this step.

**Note:** If the circuit adjustment mode is terminated without pressing the "ENTER" button, changes in adjustment data are not saved (with the exception of PIP adjustments).

***E. Terminating the Circuit Adjustment Mode***

Press the "MENU" button on the remote hand unit twice to terminate the circuit adjustment mode.

**Note:** The circuit adjustment mode can also be terminated by turning the power off.

## When Replacing the EEPROM (IC701)

The EEPROM (IC701) stores the adjustment data. After replacing the EEPROM, readjust the data to the values given in the following tables. If good performance is not obtained with these values, perform the Adjustment Procedure(s) given in the Note column.

### List of Adjustment Items

| Function Display |                  | VCJ                       |       |              |                                 | IC200 |
|------------------|------------------|---------------------------|-------|--------------|---------------------------------|-------|
| Item Number      | Abbreviated Name | Adjustment Name           | Range | Initial Data | Note                            |       |
| 0                | CON              | PICTURE GAIN CONTROL      | 0~63  | 42           | #4 (CRT Cut Off, White Balance) |       |
| 1                | TNT              | TINT CONTROL 1            | 0~63  | 31           |                                 |       |
| 2                | COL              | COLOR GAIN CONTROL 1      | 0~63  | 31           |                                 |       |
| 3                | BRT              | BRIGHT LEVEL CONTROL 1    | 0~63  | 31           |                                 |       |
| 4                | SHP              | SHARPNESS GAIN CONTROL    | 0~15  | 6            |                                 |       |
| 5                | CTG              | G CUT-OFF ADJ.            | 0~15  | 7            |                                 |       |
| 6                | CTB              | B CUT-OFF ADJ.            | 0~15  | 7            |                                 |       |
| 7                | DRG              | G DRIVE GAIN ADJ.         | 0~63  | 42           |                                 |       |
| 8                | DRB              | B DRIVE GAIN ADJ.         | 0~63  | 42           |                                 |       |
| 9                | LDG              | LOW GREEN DRIVE GAIN      | 0~63  | 20           |                                 |       |
| 10               | LDB              | LOW BLUE DRIVE GAIN       | 0~63  | 20           | #4 (CRT Cut Off, White Balance) |       |
| 11               | YDL              | Y CHROMA TRAP             | 0~1   | 0            | #10 (Black Level)               |       |
| 12               | VM               | Y OUTPUT FOR VM           | 0~1   | 0            |                                 |       |
| 13               | DCT              | SW OF DC PROPAGATED RATE  | 0~1   | 1            |                                 |       |
| 14               | DPC              | SW OF BLK LEVEL EXPANSION | 0~1   | 1            |                                 |       |
| 15               | TOT              | SW OF CHROMA TOT FILTER   | 0~1   | 0            |                                 |       |
| 16               | AXS              | SW OF R-Y, G-Y AXIS       | 0~1   | 1            |                                 |       |
| 17               | DCO              | SW OF DYNAMIC COLOR       | 0~1   | 1            |                                 |       |
| 18               | ABL              | SW OF ABL MODE            | 0~1   | 0            |                                 |       |
| 19               | DL1              | RATIO OF PRE/OVER-SHOOT   | 0~3   | 0            |                                 |       |
| 20               | DL2              | SHARPNESS F0 CONTROL      | 0~3   | 1            |                                 |       |
| 21               | SCN              | CONTRAST GAIN CONTROL     | 0~15  | 3            | #9 (Vertical Linearity)         |       |
| 22               | CTA              | CHROMA TRAP F0 ADJ.       | 0~15  | 7            |                                 |       |
| 23               | SCL              | COLOR GAIN CONTROL        | 0~15  | 2            |                                 |       |
| 24               | SHU              | TINT CONTROL              | 0~15  | 10           |                                 |       |
| 25               | SBR              | BRIGHT LEVEL CONTROL      | 0~63  | 31           |                                 |       |
| 26               | GMG              | GAMMA CONTROL             | 0~3   | 2            |                                 |       |
| 27               | AG1              | AGING MODE - WHITE OUTPUT | 0~1   | 0            |                                 |       |
| 28               | AG2              | AGING MODE - BLACK OUTPUT | 0~1   | 0            |                                 |       |
| 29               | RON              | R VIDEO OUTPUT            | 0~1   | 1            |                                 |       |
| 30               | GON              | G VIDEO OUTPUT            | 0~1   | 1            |                                 |       |
| 31               | BON              | B VIDEO OUTPUT            | 0~1   | 1            | #7 (Sub Contrast)               |       |
| 32               | PON              | RGB VIDEO OUTPUT          | 0~1   | 1            |                                 |       |
| 33               | VOF              | SW OF V-SAW OSCILLATION   | 0~1   | 1            |                                 |       |
| 35               | CMD              | SW OF V COUNTDOWN         | 0~1   | 0            |                                 |       |
| 37               | VHT              | VERTICAL HEIGHT           | 0~63  | 21           |                                 |       |
| 40               | AFC              | AFC LOOP GAIN             | 0~3   | 1            |                                 |       |
| 41               | VSC              | ADJ OF VERT S-CORRECTION  | 0~15  | 7            |                                 |       |
| 42               | VLR              | VERT LINEARITY ADJ.       | 0~15  | 7            |                                 |       |
| 44               | RPO              | REFERENCE PULSE TIMING    | 0~3   | 3            |                                 |       |
| 47               | HPS              | HORIZ POSITION ADJ.       | 0~15  | 5            |                                 |       |
| 51               | ABW              | VERT BOW CORRECTION       | 0~15  | 7            |                                 |       |
| 52               | AAG              | VERT TILT CORRECTION      | 0~15  | 7            |                                 |       |
| 55               | HBL              | H BLK ON SOFT-FULL MODE   | 0~1   | 1            | #7 (Sub Contrast)               |       |
| 61               | LBK              | H BLK OF LEFT SIDE        | 0~15  | 9            |                                 |       |
| 62               | RBK              | H BLK OF RIGHT SIDE       | 0~15  | 12           |                                 |       |
| 69               | SCT              | PICTURE CONTROL           | 0~63  | 42           |                                 |       |
| 70               | ESY              | *FACTORY SET-UP ONLY*     | 0~1   | 0            |                                 |       |
| 71               | CD2              | *FACTORY SET-UP ONLY*     | 0~1   | 0            |                                 |       |

| Function Display |                  | PIP IC7001                        |       |              |   |
|------------------|------------------|-----------------------------------|-------|--------------|---|
| Item Number      | Abbreviated Name | Adjustment Name                   | Range | Initial Data | Note  |
| 0                | CONT             | CONTRAST                          | 0~127 | 48           | #18 (PIP Contrast)<br>#16 (PIP Chroma Gain)<br>#17 (PIP Sub Tint) |
| 1                | COLR             | COLOR OUTPUT GAIN                 | 0~127 | 34           |   |
| 2                | TINT             | TINT                              | 0~63  | 28           |   |
| 3                | BRIT             | BRIGHTNESS                        | 0~31  | 15           |   |
| 4                | EMPH             | EMPHASIS                          | 0~1   | 1            |   |
| 5                | DECD             | DECODE                            | 0~1   | 0            |   |
| 6                | SYNC             | SYNC LEVEL                        | 0~3   | 3            |   |
| 7                | RVS              | GREY BACKGROUND                   | 0~1   | 0            |   |
| 8                | RVHS             | FREE RUN CONTROL                  | 0~1   | 0            |   |
| 9                | BG-Y             | BACKGROUND LUMINANCE              | 0~16  | 12           |   |
| 10               | BSTB             | BURST GAIN BLUE                   | 0~255 | 76           |   |
| 11               | BSTR             | BURST GAIN RED                    | 0~255 | 145          |   |
| 12               | MVW              | MACROVISION                       | 0~255 | 0            |   |
| 13               | CRTN             | FIXED DATA                        | 0~3   | 3            |   |
| 14               | VXA              | VERTICAL POSITION                 | 0~255 | 145          |   |
| 15               | VXS              | VERTICAL SAMPLING POSITION        | 0~63  | 41           |   |
| 16               | HXA0             | HORIZONTAL POSITION               | 0~255 | 97           |   |
| 17               | ADJ              | HORIZONTAL DELAY                  | 0~3   | 4            |   |
| 18               | YDL              | SUB Y DELAY                       | 0~255 | 4            |   |
| 19               | HPX              | SAMPLING STARTING POSITION        | 0~63  | 3            |   |
| 20               | VYA9             | SUB VERTICAL WIDTH (1/9)          | 0~255 | 68           |   |
| 21               | HYA9             | SUB HORIZONTAL WIDTH (1/9)        | 0~63  | 56           |   |
| 22               | VYA6             | SUB VERTICAL WIDTH (1/6)          | 0~255 | 51           |   |
| 23               | HYA6             | SUB HORIZONTAL WIDTH (1/6)        | 0~63  | 42           |   |
| 24               | BGBY             | B-Y GAIN                          | 0~7   | 4            |   |
| 25               | BGRY             | R-Y GAIN                          | 0~7   | 4            |   |
| 26               | CHRO             | CHROMA ALIGNMENT                  | 0~63  | 63           |   |
| 27               | EXTP             | EXTENSION PORT                    | 0~3   | 2            |   |
| 28               | BGPM             | BURST GATE PULSE                  | 0~1   | 1            |   |
| 29               | HX               | SAMPLING START POSITION           | 0~63  | 22           |   |
| 30               | EXSY             | ANALOG SYNC SEPARATOR             | 0~3   | 2            |   |
| 31               | LPF              | LOW PASS FILTER                   | 0~3   | 2            |   |
| 32               | BHS9             | EXT/INT SYNC (1/9)                | 0~3   | 3            |   |
| 33               | BHS6             | EXT/INT SYNC (1/6)                | 0~3   | 3            |   |
| 34               | HADJ             | BGP POSITION                      | 0~16  | 15           |   |
| 35               | BGST             | BGP PHASE SETTING                 | 0~63  | 14           |   |
| 36               | EXHD             | EXT HD                            | 0~3   | 0            |   |
| 37               | EXVD             | EXT VD                            | 0~1   | 0            |   |
| 38               | PN28             | PIN 28 OUTPUT                     | 0~63  | 1            |   |
| 39               | BGPX             | BURST GATE PULSE OUTPUT ALIGNMENT | 0~63  | 29           |   |
| 40               | BGPY             | COLOR SATURATION ALIGNMENT        | 0~63  | 63           |   |
| 41               | BPF1             | BANDPASS FILTER                   | 0~3   | 0            |   |
| 42               | TACC             | TEST ACC LEVEL                    | 0~63  | 0            |   |
| 43               | ACC              | ACC LEVEL                         | 0~63  | 21           |   |
| 44               | FSC              | *FACTORY ADJUSTMENT ONLY*         | 0~3   | 0            |   |

| Function Display   |  | HR |       |      |              |
|--------------------|--|----|-------|------|--------------|
| Adjustment Name    |  |    | Range | Data | Note         |
| Character Position |  |    | 0~25  | 20   | #12 CHR POS. |

| Function Display |                  | MCS                 |       |              |                  | IC3E1 |
|------------------|------------------|---------------------|-------|--------------|------------------|-------|
| Item Number      | Abbreviated Name | Adjustment Name     | Range | Initial Data | Note             |       |
| 0                | INP              | INPUT LEVEL ADJ     | 0~15  | 7            | #1 (Input Level) |       |
| 1                | AUT              | STEREO ADJ          | 0~1   | 0            |                  |       |
| 2                | WDE              | SPECTRAL WIDE       | 0~31  | 16           |                  |       |
| 3                | SPC              | SPECTRAL EXPANSION  | 0~31  | 16           |                  |       |
| 4                | ATK              | ATTACK TIME FOR AVL | 0~3   | 1            | #1 (Input Level) |       |
| 5                | VZX              | ZERO CROSS VOLUME   | 0~1   | 1            | #1 (Input Level) |       |
| 6                | MZX              | ZERO CROSS MUTE     | 0~1   | 1            | #1 (Input Level) |       |

| Function Display |                  | VDRV                    |       |              |   | IC870 |
|------------------|------------------|-------------------------|-------|--------------|---|-------|
| Item Number      | Abbreviated Name | Adjustment Name         | Range | Initial Data | Note                                      |       |
| 0                | PCON             | CONVERGENCE PHASE       | 0~255 | 128          | DISPLAY ONLY                              |       |
| 1                | PFOC             | FOCUS PHASE             | 0~255 | 0            |   |       |
| 2                | WCON             | CONVERGENCE PULSE WIDTH | 0~63  | 33           | DISPLAY ONLY<br>#14 (Dynamic Convergence) |       |
| 3                | WFOC             | FOCUS PULSE WIDTH       | 0~63  | 44           |   |       |
| 4                | PLL              | PLL DIVIDING RATIO      | 0~15  | 5            |   |       |

| Function Display |                  | HV                   |       |              |                 | IC8D00 |
|------------------|------------------|----------------------|-------|--------------|-----------------|--------|
| Item Number      | Abbreviated Name | Adjustment Name      | Range | Initial Data | Note            |        |
| 0                | HV               | HIGH VOLTAGE CONTROL | 0~254 | 150          | #3 (HV Control) |        |

| Function Display |                  | AI   |       |              |      |  |
|------------------|------------------|--|-------|--------------|------|--|
| Item Number      | Abbreviated Name | Adjustment Name                              | Range | Initial Data | Note |  |
| 0                | OT1              | *AUTO IRIS*<br>FACTORY<br>ADJUSTMENT<br>ONLY | 0~255 | 60           |      |  |
| 1                | IT2              |  | 0~255 | 140          |      |  |
| 2                | CN0              |  | 0~63  | 02           |      |  |
| 3                | CN1              |  | 0~63  | 07           |      |  |
| 4                | CN2              |  | 0~63  | 63           |      |  |
| 5                | BR0              |  | 0~63  | 28           |      |  |
| 6                | BR1              |  | 0~63  | 30           |      |  |
| 7                | BR2              |  | 0~63  | 31           |      |  |

| Function Display |                  | CONV GEO                 |       |      |                         | IC8G00 |
|------------------|------------------|--------------------------|-------|------|-------------------------|--------|
| Item Number      | Abbreviated Name | Adjustment Name          | Range | Data | Note                    |        |
| 0                | HWID             | HORIZ WIDTH              | 0~254 | 127  | #10 (Horizontal Width)  |        |
| 1                | TILT             | TILT                     | 0~254 | 127  | #11 (Raster Correction) |        |
| 2                | VBOW             | VERT BOW                 | 0~254 | 127  | #11 (Raster Correction) |        |
| 3                | SKEW             | SKEW                     | 0~254 | 127  | #11 (Raster Correction) |        |
| 4                | HBOW             | HORIZ BOW                | 0~254 | 127  | #11 (Raster Correction) |        |
| 5                | TBPC             | TOP/BOTTOM PIN CUSHION   | 0~254 | 127  | #11 (Raster Correction) |        |
| 6                | EWPC             | EAST/WEST PIN CUSHION    | 0~254 | 127  | #11 (Raster Correction) |        |
| 7                | VIPC             | VERT INSIDE PIN CUSHION  | 0~254 | 127  | #11 (Raster Correction) |        |
| 8                | HIPC             | HORIZ INSIDE PIN CUSHION | 0~254 | 127  | #11 (Raster Correction) |        |
| 9                | HKEY             | HORIZ KEYSTONE           | 0~254 | 127  | #11 (Raster Correction) |        |
| 10               | VKEY             | VERT KEYSTONE            | 0~254 | 127  | #11 (Raster Correction) |        |
| 11               | VSBW             | VERT SIDE BOW            | 0~254 | 127  | #11 (Raster Correction) |        |
| 12               | VSTL             | VERT SIDE TILT           | 0~254 | 127  | #11 (Raster Correction) |        |
| 13               | V3RD             | VERT 3RD CORRECTION      | 0~254 | 127  | #11 (Raster Correction) |        |
| 14               | V4TH             | VERT 4TH CORRECTION      | 0~254 | 127  | #11 (Raster Correction) |        |
| 15               | HSBW             | HORIZ SIDE BOW           | 0~254 | 127  | #11 (Raster Correction) |        |
| 16               | HSKW             | HORIZ SIDE SKEW          | 0~254 | 127  | #11 (Raster Correction) |        |
| 17               | H3RD             | HORIZ 3RD CORRECTION     | 0~254 | 127  | #11 (Raster Correction) |        |
| 18               | HSSS             | HORIZ SIDE S CORRECTION  | 0~254 | 127  | #11 (Raster Correction) |        |
| 19               | HLIN             | HORIZ LINEARITY          | 0~254 | 127  | #11 (Raster Correction) |        |
| 20               | HSLN             | HORIZ SIDE LINEARITY     | 0~254 | 127  | #11 (Raster Correction) |        |

| Function Display |                  | CONV            |                            |       |      | Red: IC8D00 Blue: IC8E00  |
|------------------|------------------|-----------------|----------------------------|-------|------|---------------------------|
| Item Number      | Abbreviated Name | Adjustment Name | Range                      | Data  | Note |                           |
| Red              | Blue             |                 |                            |       |      |                           |
| 0                | 30               | HSTA            | HORIZ STATIC               | 0~254 | 127  | #14 (Dynamic Convergence) |
| 1                | 31               | VSTA            | VERT STATIC                | 0~254 | 127  | #14 (Dynamic Convergence) |
| 2                | 32               | TILT            | VERT TILT                  | 0~254 | 127  | #14 (Dynamic Convergence) |
| 3                | 33               | BOW             | VERT BOW                   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 4                | 34               | SKEW            | SKEW                       | 0~254 | 127  | #14 (Dynamic Convergence) |
| 5                | 35               | HBOW            | HORIZ BOW                  | 0~254 | 127  | #14 (Dynamic Convergence) |
| 6                | 36               | VWID            | VERT HEIGHT                | 0~254 | 127  | #14 (Dynamic Convergence) |
| 7                | 37               | VLIN            | VERT LINEARITY             | 0~254 | 127  | #14 (Dynamic Convergence) |
| 8                | 38               | HWID            | HORIZ WIDTH                | 0~254 | 127  | #14 (Dynamic Convergence) |
| 9                | 39               | HLIN            | HORIZ LINEARITY            | 0~254 | 127  | #14 (Dynamic Convergence) |
| 10               | 40               | HSDL            | LEFT HORIZ SIDE            | 0~254 | 127  | #14 (Dynamic Convergence) |
| 11               | 41               | HSDR            | RIGHT HORIZ SIDE           | 0~254 | 127  | #14 (Dynamic Convergence) |
| 12               | 42               | SLIN            | HORIZ LIN MIDDLE (1)       | 0~254 | 127  | #14 (Dynamic Convergence) |
| 13               | 43               | CLIN            | HORIZ LIN MIDDLE (2)       | 0~254 | 127  | #14 (Dynamic Convergence) |
| 14               | 44               | VKLU            | VERT KEYSTONE (L-UPPER)    | 0~254 | 127  | #14 (Dynamic Convergence) |
| 15               | 45               | HKLU            | HORIZ KEYSTONE (L-UPPER)   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 16               | 46               | VKLL            | VERT KEYSTONE (L-LOWER)    | 0~254 | 127  | #14 (Dynamic Convergence) |
| 17               | 47               | HKLL            | HORIZ KEYSTONE (L-LOWER)   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 18               | 48               | VKRL            | VERT KEYSTONE (R-LOWER)    | 0~254 | 127  | #14 (Dynamic Convergence) |
| 19               | 49               | HKRL            | HORIZ KEYSTONE (R-LOWER)   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 20               | 50               | VKRU            | VERT KEYSTONE (R-UPPER)    | 0~254 | 127  | #14 (Dynamic Convergence) |
| 21               | 51               | HKRU            | HORIZ KEYSTONE (R-UPPER)   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 22               | 52               | LHBW            | HORIZ SLOPING ENDS (LEFT)  | 0~254 | 127  | #14 (Dynamic Convergence) |
| 23               | 53               | RHBW            | HORIZ SLOPING ENDS (RIGHT) | 0~254 | 127  | #14 (Dynamic Convergence) |
| 24               | 54               | LVBW            | VERT SLOPING ENDS (LEFT)   | 0~254 | 127  | #14 (Dynamic Convergence) |
| 25               | 55               | RVBW            | VERT SLOPING ENDS (RIGHT)  | 0~254 | 127  | #14 (Dynamic Convergence) |
| -                | 56               | DA42            | KEYSTONE OFFSET            | 0~254 | 127  | #14 (Dynamic Convergence) |
| 27               | 57               | DA50            | ----                       | 0~254 | 127  | Display Only              |
| 28               | 58               | DA51            | ----                       | 0~254 | 127  | Display Only              |
| 29               | 59               | DA52            | ----                       | 0~254 | 127  | Display Only              |

**[MULTI CHANNEL SOUND CIRCUIT]**

**1. Input Level**

**Adjustment purpose**

Set the level of the input signal for the multi channel sound circuit.

**Symptom when**

**incorrectly adjusted**

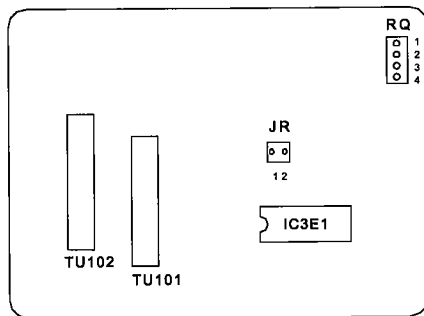
Distorted sound during an MCS broadcast.

|                      |                               |
|----------------------|-------------------------------|
| Measuring Instrument | Oscilloscope                  |
| Test Point           | Connector "JR" pin 2          |
| Exit Trigger         | -----                         |
| Measurement range    | DIV 50mV<br>TIME 2ms          |
| Input Signal         | RF signal<br>(Monaural Sound) |
| Input Terminal       | RF IN terminal                |

1. Supply an RF signal (monaural sound 400Hz 100% MOD).
  2. Connect the oscilloscope to connector "JR" pin 2.
  3. Press the "MENU" button on a remote hand unit.
  4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
  5. Set the adjustment function to "MCS" by pressing the "AUDIO" button.
  6. Initialize adjustment values to those shown in the table below by pressing the "VIDEO" and "ADJUST" buttons.
  7. Select adjustment item "0 INP" using the "VIDEO" button.
  8. Set the adjustment data so that the amplitude is  $500 \pm 20$  mVrms ( $1.41 \pm 0.05$ Vp-p)
  9. Press "ENTER" to write the adjustment data into memory.
  10. Press the "MENU" button twice to terminate the circuit adjustment mode.
- Note:** Adjustment item 2 (Stereo Separation) must be performed after this adjustment.

| Adjustment Abbreviated Name | Initial Data |
|-----------------------------|--------------|
| 0 INP                       | 7            |
| 1 AUT                       | 0            |
| 2 WDE                       | 16           |
| 3 SPC                       | 16           |
| 4 ATTK                      | 1            |
| 5 VZX                       | 1            |
| 6 MZX                       | 1            |

PCB-SIGNAL (COMPONENT SIDE)



**[MULTI CHANNEL SOUND CIRCUIT]**

**2. Separation**

**Adjustment purpose**

Adjust right and left separation.

**Symptom when**

**incorrectly adjusted**

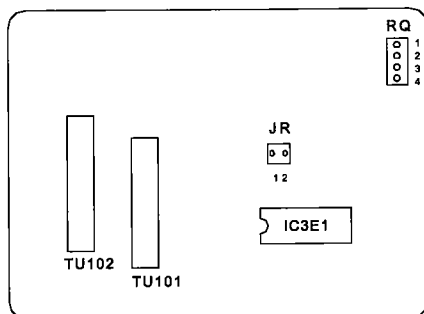
Poor or no stereo separation.

|                      |                             |
|----------------------|-----------------------------|
| Measuring Instrument | Oscilloscope                |
| Test Point           | Connector "JR" pin 2        |
| Exit Trigger         | -----                       |
| Measurement range    | Division 10mV<br>Time 2ms   |
| Input Signal         | RF signal<br>(Stereo Sound) |
| Input Terminal       | RF IN terminal              |

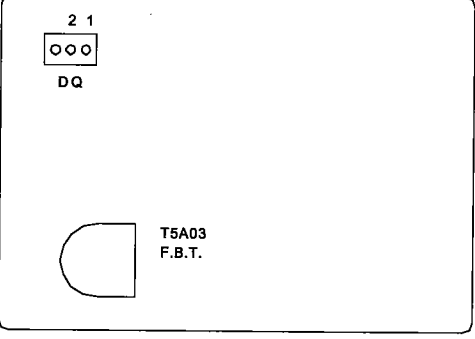
**Note:** This adjustment must follow item 1 (Input Level)

1. Supply an RF signal (L-CH stereo sound 300Hz 30% MOD).
2. Connect the oscilloscope to connector "JR" pin 2.
3. Press the "MENU" button on a remote hand unit.
4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
5. Set the adjustment function to "MCS" by pressing the "AUDIO" button.
6. Make sure that the value of item "3 SPC" is 16.
7. Select adjustment item "2 WDE" using the "VIDEO" button
8. Using the "ADJUST" button, set the adjustment data so that the amplitude of the 300Hz waveform is at minimum.
9. Change the modulation frequency to 3kHz.
10. Select adjustment item "3 SPC" using the "VIDEO" button.
11. Using the "ADJUST" button, set the adjustment data so that the amplitude of the 3kHz waveform is at minimum.
12. Repeat steps 7 and 8 .
13. Press "ENTER" to write the adjustment data into memory.
14. Press the "MENU" button twice to terminate the circuit adjustment mode.

PCB-SIGNAL (COMPONENT SIDE)





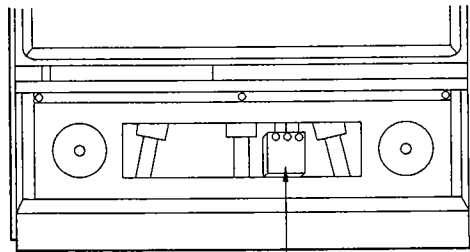
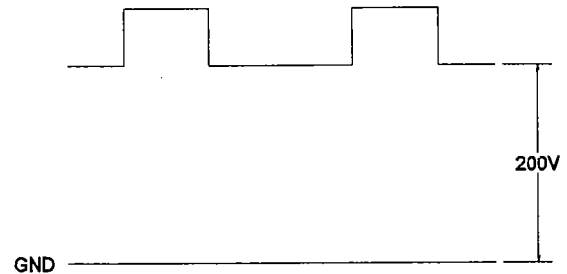
|  |  |   |                    |
|--|--|---|--------------------|
| <b>[High Voltage Circuit]</b>  |  | <b>Adjustment purpose</b>   | CRT anode voltage. |
| <b>3. High Voltage Control</b>   |  | <b>Symptom when incorrectly adjusted</b>  | Too dark picture.  |
| <b>Measuring Instrument</b>  | DC Voltmeter   | <p><b>Note:</b> <i>This adjustment must follow item 4 (CRT Cut OFF, White Balance). Set the CONTRAST control to maximum and BRIGHTNESS control to center position..</i></p> <ol style="list-style-type: none"> <li>1. Supply a VIDEO signal (monoscope).</li> <li>2. Observe the DC voltage between pins 1 and 2 of connector DQ. (positive lead to pin 2).</li> <li>3. Press the "MENU" button on a remote hand unit.</li> <li>4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.</li> <li>5. Set the adjustment function to "HV" by pressing the "AUDIO" button.</li> <li>6. Select the adjustment item "0 HV" using the "VIDEO" button.</li> <li>7. Set the adjustment data so the DC voltmeter reads <math>0.15 \pm 0.005V</math> using the "ADJUST" button.</li> <li>8. Press "ENTER" to write the adjustment data into memory.</li> <li>9. Press the "MENU" button twice to terminate the circuit adjustment mode.</li> <li>10. Confirm the voltage at DQ pin 2 does not exceed 0.85V.</li> <li>11. If voltage exceeds this limit, repeat adjustment procedure.</li> </ol> |                    |
| <b>Test Point</b>  | - Lead: pin 1 of connector DQ<br>+ Lead: pin 2 of connector DQ |   |                    |
| <b>Exit Trigger</b>  | ----   |   |                    |
| <b>Measurement range</b>   | ----   |   |                    |
| <b>Input Signal</b>  | VIDEO signal (Monoscope)                                       |   |                    |
| <b>Input Terminal</b>  | VIDEO IN terminal  |   |                    |
| <p><b>PCB-MAIN (COMPONENT SIDE)</b></p>  |  |   |                    |

|  |   |
|--|---|
| <b>[CRT Circuit]</b><br><br><b>4. CRT Cut Off, White Balance</b> | <b>Adjustment purpose</b> To set the cut off point of the three CRTs<br><br><b>Symptom when incorrectly adjusted</b> Monochrome with color tint, or incorrect brightness. |
|--|---|

|                             |                            |
|-----------------------------|----------------------------|
| <b>Measuring Instrument</b> | DC Ammeter<br>Oscilloscope |
| <b>Test Point</b>           | TP6R/G/B                   |
| <b>Exit Trigger</b>         | ----                       |
| <b>Measurement Range</b>    | Division 5V<br>Time 2ms    |
| <b>Input Signal</b>         | ----                       |
| <b>Input Terminal</b>       |                            |

1. Select the EXT-1 input with no signal supplied.
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function "VCJ " by pressing the "AUDIO" button.
5. Set the items shown in the Table to the given data values.
6. Observe the waveform at TP6R.
7. Adjust the SCREEN control (R) so that the voltage is 200V.
8. Observe the waveform at TP6G.
9. Adjust the SCREEN control (G) so that the voltage is 200V.
10. Observe the waveform at TP6B.
11. Adjust the SCREEN control (B) so that the voltage is 200V.

| Abbreviated Name | Data |
|------------------|------|
| 3 BRT            | 31   |
| 5 CTG            | 7    |
| 6 CTB            | 7    |
| 7 DRG            | 42   |
| 8 DRB            | 42   |
| 25 SBR           | 31   |

Focus Pack  
(SCREEN VR)

FRONT VIEW

12. Supply a VIDEO signal (full white raster)
13. Set adjustment data of "7 DRG" and "8 DRB" so that the white level is optimum at the center of the screen.
14. Observe the waveform at "TP6G".
15. Set the data of "5 CTG" so that the voltage is 200V.
16. Observe the waveform at "TP6B".
17. Set the data of "6 CTB" so the the voltage is 200V.
18. Measure the DC current as indicated in Table 1.

**Note:** The internal resistance of the ammeter must be 30  $\Omega$  or less, and the length of the lead wires should be 12 inches or less. Measure the current in the three CRTs at the same time. Make sure that the current in the GREEN and BLUE CRTs does not exceed the values shown in Table 2. If excessive, readjust the current to the approximate values given in Table 3 and repeat steps 1-18.

19. Press "ENTER" to write the adjustment data into memory.
20. Press the "MENU" button twice to terminate the circuit adjustment mode.

|   | Connections of Ampere Meter |               |
|---|-----------------------------|---------------|
|   | Positive                    | Negative      |
| R | R6R0 (+ SIDE)               | R6R0 (- SIDE) |
| G | R6G0 (+ SIDE)               | R6G0 (- SIDE) |
| B | R6B0 (+SIDE)                | R6B0 (- SIDE) |

Table 1

|   | Maximum Current |
|---|-----------------|
| G | 580 $\mu$ A     |
| B | 530 $\mu$ A     |

Table 2

| Current Proportion |             |             |
|--------------------|-------------|-------------|
| R                  | G           | B           |
| 225 $\mu$ A        | 540 $\mu$ A | 485 $\mu$ A |

Table 3

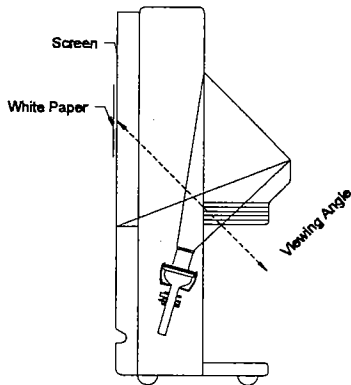
**[Focus Circuit]****5. Lens Focus****Adjustment purpose** The best resolution of the picture.**Symptom when incorrectly adjusted** Blurred picture.

|                      |                          |
|----------------------|--------------------------|
| Measuring Instrument | -----                    |
| Test Point           | -----                    |
| Exit Trigger         | -----                    |
| Measurement range    | -----                    |
| Input Signal         | VIDEO signal (Monoscope) |
| Input Terminal       | VIDEO IN terminal        |

**Note:** This adjustment must follow item 6 (Electrostatic Focus). Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.

1. Supply a VIDEO signal (monoscope).
2. Produce a GREEN monochrome picture.
  - a) Press the "MENU" button on a remote hand unit.
  - b) Press the buttons 2-3-5-9 then press the button specified in the table below to select each color.
3. Adjust the position of the lens for the best picture resolution.
 

**NOTE:** Attach a white paper to the inside center of the screen. During adjustment, observe the picture on the screen from inside for easier adjustment.
4. Display the original picture and press "MENU" twice.

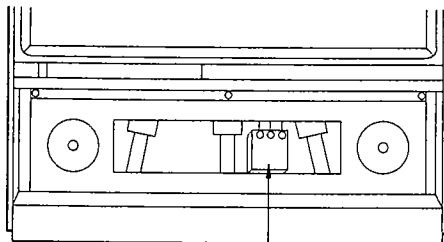


| Monochrome Picture | Remote Hand Unit Button |
|--------------------|-------------------------|
| RED                | 1                       |
| GREEN              | 2                       |
| BLUE               | 3                       |

**[Focus Circuit]****6. Electrostatic Focus****Adjustment purpose** For best resolution of the picture.**Symptom when incorrectly adjusted** Out of focus picture.

|                      |                          |
|----------------------|--------------------------|
| Measuring Instrument | -----                    |
| Test Point           | -----                    |
| Exit Trigger         | -----                    |
| Measurement range    | -----                    |
| Input Signal         | VIDEO signal (Monoscope) |
| Input Terminal       | VIDEO IN terminal        |

- Note:** This adjustment must follow item 7 (Sub Contrast). If you replace the CRT, this adjustment must follow item 5, (Lens Focus). Perform this adjustment respectively for RED, GREEN, and BLUE monochrome pictures.
1. Supply a VIDEO signal (monoscope).
  2. Press the "A/V RESET" button in the control panel to reset all VIDEO FUNCTIONS.
  3. Produce a monochrome picture.
    - a) Press the "MENU" button on a remote hand unit.
    - b) Press the buttons 2-3-5-9 then press the button specified in the table below to select each color.
  4. Adjust the FOCUS VR on the focus pack so the sharpness of the upper area of the screen is optimum.
  5. Display the original picture and press "MENU" twice.



Focus Pack  
(SCREEN VR)

FRONT VIEW

| Monochrome Picture | Remote Hand Unit Button |
|--------------------|-------------------------|
| RED                | 1                       |
| GREEN              | 2                       |
| BLUE               | 3                       |

|                        |  |  |
|------------------------|--|--|
| <b>[Video Circuit]</b> |  | <b>Adjustment purpose</b> To set the beam current to its optimum value.      |
| <b>7. Sub Contrast</b> |  | <b>Symptom when incorrectly adjusted</b> Excessive or insufficient contrast. |

|                             |  |
|-----------------------------|--|
| <b>Measuring Instrument</b> | DC Milliammeter  |
| <b>Test Point</b>           | + Lead: pin 3 of connector MS<br>- Lead: pin 1 of connector MS |
| <b>Exit Trigger</b>         | -----  |
| <b>Measurement range</b>    | 3mA  |
| <b>Input Signal</b>         | RF signal<br>(Gray scale 87.5% MOD)                            |
| <b>Input Terminal</b>       | RF IN terminal   |

**Note:** This adjustment must follow item 4 (CRT Cut-Off, White Balance). Preheat the set for two minutes or more.

1. Supply an RF signal (gray scale 87.5% MOD).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function "VCJ " by pressing the "AUDIO" button.
5. Select the adjustment item "69 SCT" using the "VIDEO" button.
6. Measure the current at pins 1 and 3 of connector MS (Plus lead to pin 3).
7. Set the adjustment data so the DC milliammeter reads  $725 \pm 25\mu A$ .
8. Press "ENTER" to write the adjustment data into memory.
9. Press the "MENU" button twice to terminate the circuit adjustment mode.

**PCB-MAIN (COMPONENT SIDE)**

|                        |  |  |
|------------------------|--|--|
| <b>[Video Circuit]</b> |  | <b>Adjustment purpose</b> Picture Luminance.                                   |
| <b>8. Black Level</b>  |  | <b>Symptom when incorrectly adjusted</b> Excessive or insufficient brightness. |

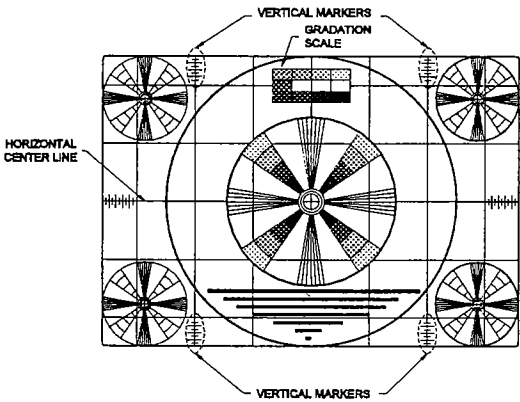
|                             |                             |
|-----------------------------|-----------------------------|
| <b>Measuring Instrument</b> | -----                       |
| <b>Test Point</b>           | -----                       |
| <b>Exit Trigger</b>         | -----                       |
| <b>Measurement range</b>    | -----                       |
| <b>Input Signal</b>         | VIDEO signal<br>(Monoscope) |
| <b>Input Terminal</b>       | VIDEO IN terminal           |

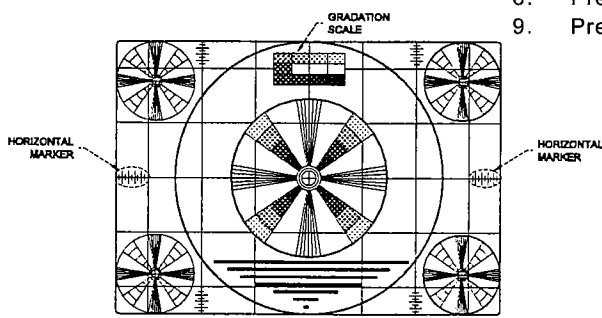
**Note:** This adjustment must follow item 7 (Sub-Contrast).

1. Supply an VIDEO signal (monoscope).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function "VCJ " by pressing the "AUDIO" button.
5. Select the adjustment item "25 SBR" using the "VIDEO" button.
6. Observe the gradation pattern inside a monoscope signal, and set the adjustment data so that both levels, at the 10% and 0% areas of the gradation pattern, are the same (black level 8%) using the "ADJUST" button.
7. Press "ENTER" to write the adjustment data into memory.
8. Press the "MENU" button twice to terminate the circuit adjustment mode.

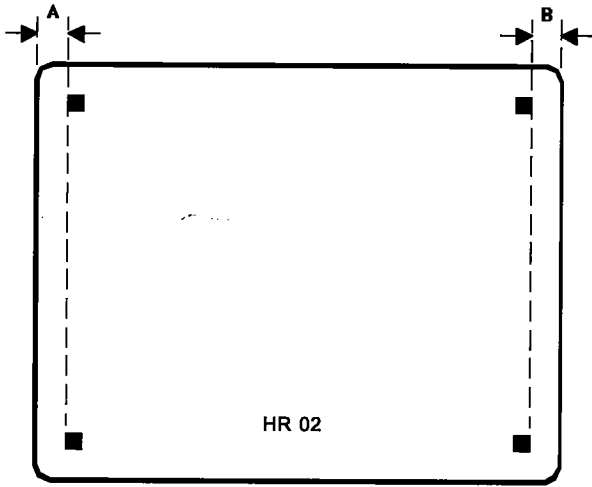
|     |     |     |     |
|-----|-----|-----|-----|
| 40% | 30% | 20% | 10% |
| 50% | 0%  | 0%  | 0%  |
| 60% | 70% | 80% | 90% |

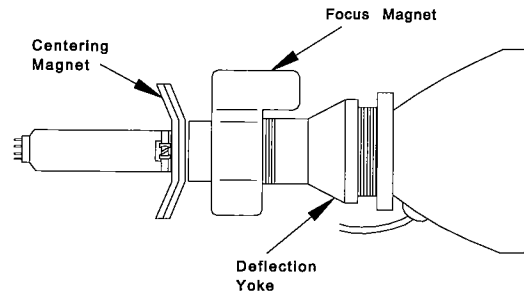
**GRADATION SCALE**

|   |                          |  |  |
|---|--------------------------|--|--|
| <b>[Deflection Circuit]</b>   |                          | <b>Adjustment purpose</b>  | To set vertical linearity.               |
| <b>9. Vertical Linearity, Height and S-Correction</b>                             |                          | <b>Symptom when incorrectly adjusted</b>   | Incorrect vertical height and linearity. |
| <b>Measuring Instrument</b>   | -----                    | <ol style="list-style-type: none"> <li>1. Supply a VIDEO signal (monoscope)</li> <li>2. Press the "MENU" button on a remote hand unit.</li> <li>3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.</li> <li>4. Set the adjustment function to "VCJ" by pressing the "AUDIO" button.</li> <li>5. Select adjustment item "47 VHT" using the "VIDEO" button. Adjust so that the vertical markers are equal using the "ADJUST" button.</li> <li>6. Select the adjustment item "42 VLR" using the "VIDEO" button</li> <li>7. Set the adjustment data so that the largest circle is round using the "ADJUST" button.</li> <li>8. Supply a VIDEO signal (crosshatch).</li> <li>9. Select the adjustment item "41 VSC"(Vertical S) using the "VIDEO" button.</li> <li>10. Set the adjustment data so that the height of the squares in the cross hatch signal are equal at the top, bottom and middle of the screen using the "ADJUST" button.</li> <li>11. Press "ENTER" to write the adjustment data into memory.</li> <li>12. Press the "MENU" button twice to terminate the circuit adjustment mode.</li> </ol> |  |
| <b>Test Point</b>   | -----                    |  |  |
| <b>Exit Trigger</b>   | -----                    |  |  |
| <b>Measurement range</b>  | -----                    |  |  |
| <b>Input Signal</b>   | VIDEO signal (Monoscope) |  |  |
| <b>Input Terminal</b>   | VIDEO IN terminal        |  |  |
|  |                          |  |  |

|   |                          |   |  |
|---|--------------------------|---|--|
| <b>[Deflection Circuit]</b>   |                          | <b>Adjustment purpose</b>   | To set the width of the picture.             |
| <b>10. Horizontal Width</b>   |                          | <b>Symptom when incorrectly adjusted</b>  | Picture compressed or expanded horizontally. |
| <b>Measuring Instrument</b>   | -----                    | <p><b>Note:</b> This adjustment must follow item 4 (CRT Cut Off, White Balance) and item 3 (High Voltage Control). Perform this adjustment alternately with item 11 (Raster Distortion Correction).</p> <ol style="list-style-type: none"> <li>1. Supply a VIDEO signal (monoscope).</li> <li>2. Cover the RED and BLUE lenses, producing a GREEN monochrome picture.</li> <li>3. Press the "MENU" button on a remote hand unit.</li> <li>4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.</li> <li>5. Set the adjustment function to "CONV GEO" by pressing the "AUDIO" button.</li> <li>6. Select the adjustment item "0 HWID" using the "VIDEO" button.</li> <li>7. Set the adjustment data so the sum of the horizontal width markers is 6.0 using the "ADJUST" button.</li> <li>8. Press "ENTER" to write the adjustment data into memory.</li> <li>9. Press the "MENU" button twice to terminate the circuit adjustment mode.</li> </ol> |  |
| <b>Test Point</b>   | -----                    |   |  |
| <b>Exit Trigger</b>   | -----                    |   |  |
| <b>Measurement range</b>  | -----                    |   |  |
| <b>Input Signal</b>   | VIDEO signal (Monoscope) |   |  |
| <b>Input Terminal</b>   | VIDEO IN terminal        |   |  |
|  |                          |   |  |

|                             |                              |  |                                |
|-----------------------------|------------------------------|--|--------------------------------|
| [Raster Correction Circuit] |                              | Adjustment purpose   | To correct picture distortion. |
| 11. Raster Correction       |                              | Symptom when incorrectly adjusted  | Distorted picture.             |
| Measuring Instrument        |                              | <div>1. Supply a VIDEO signal (Crosshatch)</div> <div>2. Cover the RED and BLUE lenses, producing a GREEN crosshatch picture.</div> <div>3. Press the "MENU" button on a remote hand unit.</div> <div>4. Press the buttons 2-3-5-7 in sequence.<br/>(The screen will change to the circuit adjustment mode.)</div> <div>5. Set the function to "CONV GEO." ("AUDIO" button)</div> <div>6. Set the data of the items below so that all the green horizontal and vertical lines are straight and spacing is linear.</div> <div>7. Write the data into memory. (Press "ENTER")</div> <div>8. Terminate the circuit adjustment mode. (Press "MENU" twice)</div> <div><b>NOTE:</b> Adjustment 14 (Dynamic Convergence) must be performed immediately after this adjustment.</div> |                                |
| Test Point                  | ----                         |  |                                |
| Exit Trigger                | ----                         |  |                                |
| Measurement Range           | ----                         |  |                                |
| Input Signal                | VIDEO signal<br>(Crosshatch) |  |                                |
| Input Terminal              | VIDEO IN terminal            |  |                                |
|                             |                              |  |                                |
| 0 HWID                      |                              | 6 EWPC   | 12 VSTL                        |
| 1 TILT                      |                              | 7 VIPC   | 13 V3RD                        |
| 2 VBOW                      |                              | 8 HIPC   | 14 V4TH                        |
| 3 SKEW                      |                              | 9 HKEY   | 15 HSBW                        |
| 4 HBOW                      |                              | 10 VKEY  | 16 HSKW                        |
| 5 TBPC                      |                              | 11 VSBW  | 17 H3RD                        |
|                             |                              |  | 18 HSSS                        |
|                             |                              |  | 19 HLIN                        |
|                             |                              |  | 20 HSLN                        |

|                                   |                       |   |  |
|-----------------------------------|-----------------------|---|--|
| <b>[Screen Character Circuit]</b> |                       | <b>Adjustment purpose</b>   | To position the character display.   |
| <b>12. Character Position</b>     |                       | <b>Symptom when incorrectly adjusted</b>  | Incorrect Character position   |
| <b>Measuring Instrument</b>       | -----                 | <ol style="list-style-type: none"> <li>1. Supply a VIDEO signal (Monscope).</li> <li>2. Press the "MENU" button on a remote hand unit.</li> <li>3. Press the buttons 2-3-5-7 in sequence.<br/>(The screen will change to the circuit adjustment mode.)</li> <li>4. Set the function to "HR" using the "AUDIO" button.</li> <li>5. Using the "ADJUST" button, align so that the widths for A and B are equal.</li> </ol> |  |
| <b>Test Point</b>                 | -----                 |   |  |
| <b>Exit Trigger</b>               | -----                 |   |  |
| <b>Measurement range</b>          | -----                 |   |  |
| <b>Input Signal</b>               | Standard RF Broadcast |   |  |
| <b>Input Terminal</b>             | Antenna A/B           |   |  |

|                               |                           |  |   |
|-------------------------------|---------------------------|--|---|
| <b>[CRT]</b>                  |                           | <b>Adjustment purpose</b>  | To correct convergence caused by installation direction.                            |
| <b>13. Static Convergence</b> |                           | <b>Symptom when incorrectly adjusted</b>   | Color edging.   |
| <b>Measuring Instrument</b>   | -----                     | <ol style="list-style-type: none"> <li>1. Degauss the shield cover and bracket unit of the CRT assembly and chassis sheet metal.</li> <li>2. Supply a VIDEO signal (crosshatch).</li> <li>3. Make sure that the vertical linearity is generally correct. If not, change the adjustment data of "VCJ" item "42 VLR" in the circuit adjustment mode so that the vertical height and linearity is roughly correct. (refer to Adjustment 9 ).</li> <li>4. Cover the RED and BLUE lenses with lens caps to produce a GREEN monochrome picture. Rotate the centering magnet attached to the GREEN CRT, so that the center of the displayed crosshatch signal is set at the screen center.</li> <li>5. Remove lens caps covering the RED and BLUE lenses.</li> <li>6. Rotate the deflection Yoke and Centering Magnet on the RED CRT, so that the center horizontal line of the displaced RED crosshatch signal is converged on the GREEN signal to produce a yellow horizontal line.</li> <li>7. Rotate the deflection Yoke and Centering Magnet on the BLUE CRT, so that the center horizontal line of the displaced BLUE crosshatch signal is converged on the GREEN signal to produce a white horizontal line.</li> </ol> |  |
| <b>Test Point</b>             | -----                     |  |   |
| <b>Exit Trigger</b>           | -----                     |  |   |
| <b>Measurement range</b>      | -----                     |  |   |
| <b>Input Signal</b>           | VIDEO signal (Crosshatch) |  |   |
| <b>Input Terminal</b>         | VIDEO IN terminal         |  |   |

|                                |  |
|--------------------------------|--|
| <b>[Convergence Circuit]</b>   | <b>Adjustment purpose</b> To correct color misconvergence in RED, GREEN, and BLUE. |
| <b>14. Dynamic Convergence</b> | <b>Symptom when incorrectly adjusted</b> Colors misconverged.                      |

|                             |                              |
|-----------------------------|------------------------------|
| <b>Measuring Instrument</b> | -----                        |
| <b>Test Point</b>           | -----                        |
| <b>Exit Trigger</b>         | -----                        |
| <b>Measurement Range</b>    | -----                        |
| <b>Input Signal</b>         | VIDEO signal<br>(Crosshatch) |
| <b>Input Terminal</b>       | VIDEO IN terminal            |


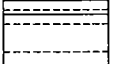
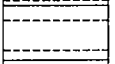
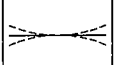



**Note:** This adjustment must follow item 13 (Static Convergence).

Dynamic convergence should not be attempted until the static convergence has been properly adjusted. (including centering adjustment, if required). Cover the RED or BLUE lens with a lens cap, and adjust the color convergence in GREEN and RED or in GREEN and BLUE.

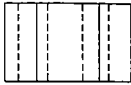


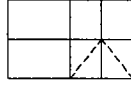
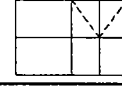
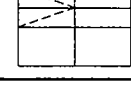
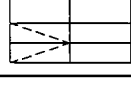
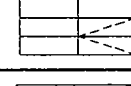
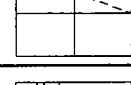
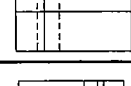
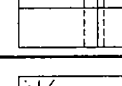

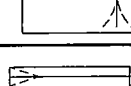
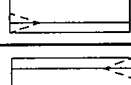



1. Supply a VIDEO signal (crosshatch).
  2. Press the "MENU" button on a remote hand unit.
  3. Press the numerical buttons 2-3-5-9 in sequence to change the screen to the adjustment mode.
  4. Adjust the convergence according to the steps described below:
    - a. Press the "VIDEO" button to select a specific adjustment item.
    - b. Press the "ADJUST UP/DOWN" button to change adjustment data.
    - c. Press "ENTER" to switch between RED and BLUE.
- Note:** The newly entered data is automatically recorded.
5. Display a red raster and a blue raster. Confirm no black or bright horizontal line appears on the middle of the screen. If a line appears, set the data of the adjustment item "56 DA42" so that the line disappears.
  6. Confirm no misconvergence occurs at the center of the screen. Use the following method to correct center screen misconvergence:
    - a. When in the dynamic convergence adjustment mode, select the items shown in Table A to converge RED and BLUE at the center of the screen.
  7. Press the "MENU" button twice to terminate the dynamic adjustment mode.

| Adjustment Item |              | Description              |
|-----------------|--------------|--------------------------|
| No.             | Abbreviation |                          |
| 00              | HSTA         | Red Horizontal Position  |
| 01              | VSTA         |                          |
| 30              | HSTA         | Blue Horizontal Position |
| 31              | VSTA         |                          |

Table A

| RED    | BLUE    | ITEM               | ADJUSTMENT METHOD                            | PICTURE   |
|--------|---------|--------------------|--|---|
| 2 TILT | 32 TILT | Vertical Tilt      | Merge horizontal center line with Green Line |  |
| 6 VWID | 36 VWID | Vertical Height    | Merge horizontal lines with GREEN lines      |  |
| 7 VLIN | 37 VLIN | Vertical Linearity | Merge horizontal lines with GREEN lines      |  |
| 3 BOW  | 33 BOW  | Vertical Bow       | Merge horizontal center line with Green Line |  |
| 4 SKEW | 34 SKEW | Skew               | Merge vertical center line with Green Line   |  |
| 5 HBOW | 35 HBOW | Horizontal Bow     | Merge vertical center line with Green Line   |  |
| 8 HWID | 38 HWID | Horizontal Width   | Merge vertical lines with Green Line         |  |



| RED     | BLUE    | ITEM                                   | ADJUSTMENT METHOD   | PICTURE   |
|---------|---------|--|---|---|
| 9 HLIN  | 39 HLIN | Horizontal Linearity                   | Merge Vertical lines with Green Line                        |    |
| 15 HKLU | 45 HKLU | Horizontal Keystone                    | Merge upper left vertical line with GREEN line              |    |
| 17 VLIN | 47 HKLL | Horizontal Keystone                    | Merge lower left vertical line with GREEN line              |    |
| 19 HKRL | 49 HKRL | Horizontal Keystone                    | Merge lower right vertical line with GREEN Line             |    |
| 21 HKRU | 51 HKRU | Horizontal Keystone                    | Merge upper right vertical line with GREEN Line             |    |
| 14 VKLU | 44 VKLU | Vertical Keystone                      | Merge upper left horizontal line with GREEN Line            |    |
| 16 VKLL | 46 VKLI | Vertical Keystone                      | Merge lower left horizontal line with GREEN Line            |    |
| 18 VKRI | 48 VKRL | Vertical Keystone                      | Merge lower right horizontal line with GREEN Line           |   |
| 20 VKRU | 50 VKRU | Vertical Keystone                      | Merge upper right horizontal line with GREEN Line           |  |
| 10 HSDL | 40 HSDL | Left Horizontal Side                   | Merge left Vertical line with Green Line                    |  |
| 11 HSDR | 41 HSDR | Right Horizontal Side                  | Merge right Vertical line with Green Line                   |  |
| 22 LHBW | 52 LHBW | Horizontal Sloping Ends                | Merge upper and lower left vertical line with GREEN Line    |  |
| 23 RHBW | 53 RHBW | Horizontal Sloping Ends                | Merge upper and lower right vertical line with GREEN Line   |  |
| 24 LVBW | 53 LVBW | Vertical Sloping Ends                  | Merge upper and lower left horizontal line with GREEN Line  |  |
| 25 RVBW | 55 RVBW | Vertical Sloping Ends                  | Merge upper and lower right horizontal line with GREEN Line |  |
| 12 SLIN | 12 SLIN | Horizontal Width at the Middle (1)     | Merge Vertical lines with Green Line                        |  |
| 13 CLIN | 39 HLIN | Horizontal linearity at the Middle (2) | Merge Vertical lines with Green Line                        |  |

|                             |                   |   |  |
|-----------------------------|-------------------|---|--|
| <b>[PIP Circuit]</b>        |                   | <b>Adjustment purpose</b>   | Set the clock frequency of PIP.              |
| <b>15. PIP fsc</b>          |                   | <b>Symptom when incorrectly adjusted</b>  | Interference or no color in the sub picture. |
| <b>Measuring Instrument</b> | Frequency Counter | <ol style="list-style-type: none"><li>1. Supply a Video Color Bar signal input.</li><li>2. Select PIP window to display the Color Bar image.</li><li>3. Switch INPUT to External signal mode. Do not supply an input signal.</li><li>4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.</li><li>5. Set the adjustment function to "PIP " by pressing the "AUDIO" button.</li><li>6. Adjust item #44 FSC from 0 to 2.</li><li>7. Observe the frequency at TP61</li><li>8. Adjust VC7001 so that the frequency is 3.579545 MHz <math>\pm</math> 50 Hz.</li><li>9. Set #44 FSC back to a value of 0.</li><li>10. Press "MENU" twice to terminate the circuit adjustment mode.</li></ol> |  |
| <b>Test Point</b>           | TP61              |   |  |
| <b>Exit Trigger</b>         | -----             |   |  |
| <b>Measurement range</b>    | -----             |   |  |
| <b>Input Signal</b>         |                   |   |  |
| <b>Input Terminal</b>       |                   |   |  |

**PCB-PIP/APT (COMPONENT SIDE)**

The diagram shows the component side of the PCB-PIP/APT. At the top, there are four test points labeled TP62, TP63, GND, and TP61, each represented by a small circle. Below TP62 and TP63 is a rectangular component labeled IC7002. Further down is a larger rectangular component labeled IC7001. At the bottom left is a small square component labeled VC7000.

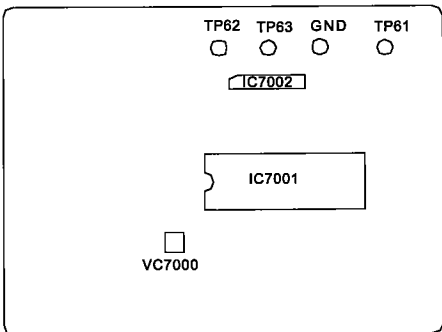
|                            |  |  |  |
|----------------------------|--|--|--|
| <b>[PIP Circuit]</b>       |  | <b>Adjustment purpose</b>                | To set the color level between main and sub picture. |
| <b>16. PIP Chroma Gain</b> |  | <b>Symptom when incorrectly adjusted</b> | Different color level between main and sub picture.  |

|                             |                             |
|-----------------------------|-----------------------------|
| <b>Measuring Instrument</b> | Oscilloscope                |
| <b>Test Point</b>           | TP63 (pin 5 of IC7001)      |
| <b>Exit Trigger</b>         | -----                       |
| <b>Measurement range</b>    | Division 20mV<br>Time 10μs  |
| <b>Input Signal</b>         | VIDEO signal<br>(Color Bar) |
| <b>Input Terminal</b>       | VIDEO IN terminal           |

**PCB-PIP/APT (COMPONENT SIDE)**

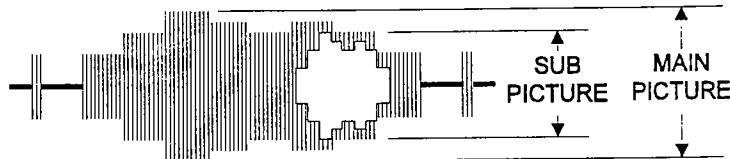


**Note:** Preheat the set for one minute or more.

1. Supply a VIDEO signal (color bar).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function to "PIP " by pressing the "AUDIO" button.
5. Set all the items in adjustment function "PIP" to the initial data value (refer to page 21 ) using the "VIDEO and AUDIO" button.
6. Observe the waveform at TP63 (pin 5 of IC7001).
7. Select adjustment item "1 COLOR" using the "VIDEO" button.
8. Set the adjustment data so that the chroma signal amplitude of sub picture is  $90 \pm 5\%$  of main picture using the "ADJUST" button (Fig.7).
9. Press the "ENTER" to write the adjustment data into memory.
10. Press the "MENU" button twice to terminate the circuit adjustment mode.

**Note:** Adjustment item 17 (PIP Sub Tint) must be performed immediately after this adjustment.

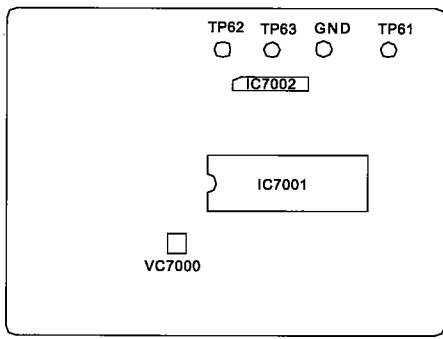
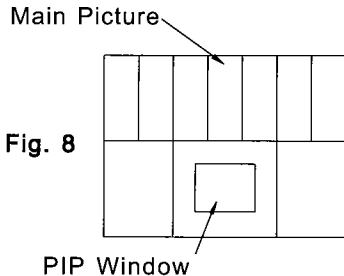
  



**Fig. 7**

Fig. 7

|                             |                             |  |
|-----------------------------|-----------------------------|--|
| <b>[PIP Circuit]</b>        |                             | <b>Adjustment purpose</b> To obtain the same hue in the main and sub picture.  |
| <b>17. PIP Sub Tint</b>     |                             | <b>Symptom when incorrectly adjusted</b> Different hue between the main and sub picture, and color smear.  |
| <b>Measuring Instrument</b> | -----                       | <b>Note:</b> Preheat the set for one minute or more.<br>This adjustment must follow item 16 (PIP Chroma Gain) <ol style="list-style-type: none"> <li>1. Supply a VIDEO signal (color bar).</li> <li>2. Activate PIP and display the same picture on main screen and sub picture screen.</li> <li>3. Press the "MENU" button on a remote hand unit.</li> <li>4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.</li> <li>5. Set the adjustment function to "PIP " by pressing the "AUDIO" button.</li> <li>6. Select adjustment item "2 TINT" using the "VIDEO" button.</li> <li>7. Set the adjustment data so that the sub picture corresponds to the hue in the main picture using the "ADJUST" button.</li> <li>8. Press the "ENTER" to write the adjustment data into memory.</li> <li>9. Press the "MENU" button twice to terminate the circuit adjustment mode.</li> </ol> |
| <b>Test Point</b>           | -----                       |  |
| <b>Exit Trigger</b>         | -----                       |  |
| <b>Measurement range</b>    | -----                       |  |
| <b>Input Signal</b>         | VIDEO signal<br>(Color Bar) |  |
| <b>Input Terminal</b>       | VIDEO IN terminal           |  |

|  |                       |  |
|--|-----------------------|--|
| <b>[PIP Circuit]</b>   |                       | <b>Adjustment purpose</b> To obtain the proper contrast ratio in the sub picture.  |
| <b>18. PIP Contrast</b>  |                       | <b>Symptom when incorrectly adjusted</b> Sub picture too light or too dark.  |
| <b>Measuring Instrument</b>  | Oscilloscope          | <ol style="list-style-type: none"> <li>1. Apply Color Bar signal to External Input and select this image on both the Main and PIP pictures.</li> <li>2. Using the PIP position button on a remote hand unit, adjust to place the PIP window as shown in figure 8 .</li> <li>3. Connect Oscilloscope probe to TP-62 and observe the waveform.</li> <li>4. Synchronize the waveform on the Oscilloscope as shown in figure 8.</li> <li>5. Press the "MENU" button on a remote hand unit.</li> <li>6. Press the numerical buttons 2-3-5-7 in sequence to enter the circuit adjustment mode.</li> <li>7. Select the "PIP" function using the "AUDIO" button.</li> <li>8. Adjust item "0 CONT" using the "ADJUST UP/DOWN" buttons to obtain the waveform ratio shown in figure 7 (Adjustment #16). PIP amplitude should be equal to <math>90 \pm 5\%</math> of Main picture.</li> <li>9. Press the "ENTER" button to write the adjustment data into memory.</li> <li>10. Press the "MENU" button twice to terminate the circuit adjustment mode.</li> </ol> |
| <b>Test Point</b>  | TP-62                 |  |
| <b>Exit Trigger</b>  |                       |  |
| <b>Measurement range</b>   |                       |  |
| <b>Input Signal</b>  | VIDEO<br>(Color Bars) |  |
| <b>Input Terminal</b>  | VIDEO IN terminal     |  |
| <b>PCB-PIP/APT (COMPONENT SIDE)</b><br> |                       |    |

## CHIP PARTS REPLACEMENT

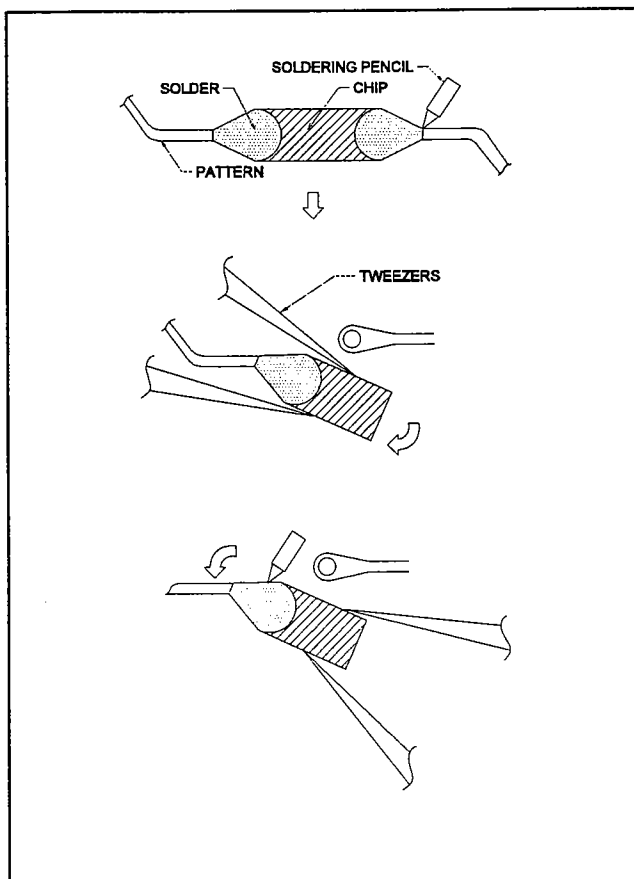
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

### CAUTIONS:

1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required

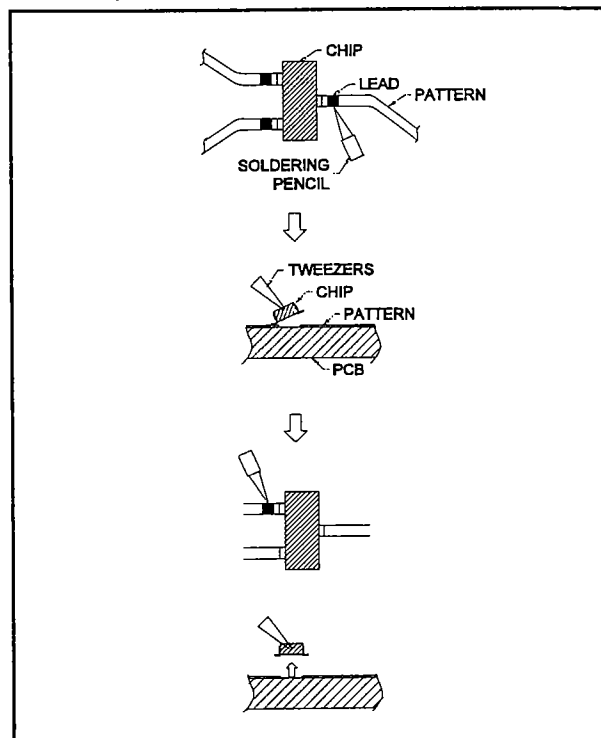
### 1. Removal of Chip Parts (Resistors, Capacitors, etc)

- A. Grasp the part with tweezers. Melt the solder at both sides alternately and remove one side of the part with a twisting motion.
- B. Melt the solder at the other side and remove the part.



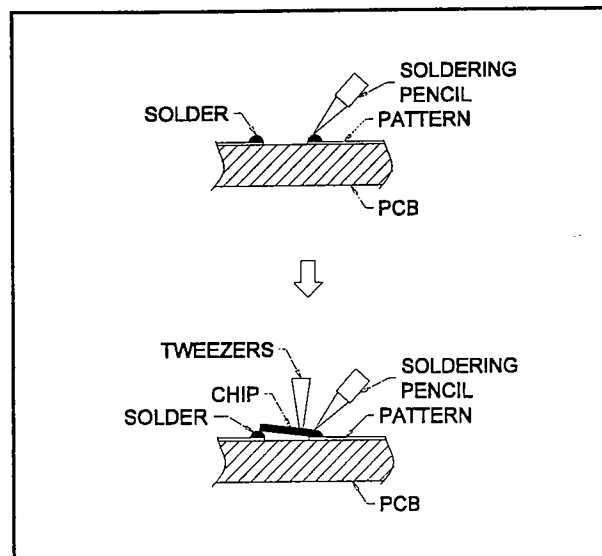
### 2. Removal of Chip Parts (Transistors)

- A. Melt the solder of one lead and lift the side of that lead upward.
- B. Simultaneously melt the solder of the other two leads and lift the part from the PCB.



### 3. Replacement

- A. Presolder the contact points on the circuit pattern.
- B. Press the part downward with tweezers and apply the soldering iron as shown



## 2. Electrical Parts and Others

### A. Model : VS-45501/VS-45502/VS-45501A/VS-50501/VS-50502/VS-50501A

In order to expedite delivery of replacement parts orders, specify the following:

1. Model Number/Serial Number
2. Part Number and description
3. Quantity

**Note:** Unless complete information is supplied, delay in processing of orders will result.

### B. Symbol

The electrical parts with shading are critical components, and the parts with \* are warranty return items.

 : Critical Components

\* : Warranty Items

| MARK        | B         | C          | D         | F       | G       | J       | K        |
|-------------|-----------|------------|-----------|---------|---------|---------|----------|
| Tolerance % | $\pm 0.1$ | $\pm 0.25$ | $\pm 0.5$ | $\pm 1$ | $\pm 2$ | $\pm 5$ | $\pm 10$ |

| MARK        | M        | N        | V          | X          | Z          | P          | Q          |
|-------------|----------|----------|------------|------------|------------|------------|------------|
| Tolerance % | $\pm 20$ | $\pm 30$ | +10<br>-10 | +40<br>-20 | +80<br>-20 | +100<br>-0 | +30<br>-10 |

| MARK           | B         | C          | D         | F       | G       |
|----------------|-----------|------------|-----------|---------|---------|
| Tolerance (pF) | $\pm 0.1$ | $\pm 0.25$ | $\pm 0.5$ | $\pm 1$ | $\pm 2$ |

### C. Abbreviation

|          |           |
|----------|-----------|
| [45501]  | VS-45501  |
| [45502]  | VS-45502  |
| [45501A] | VS-45501A |
| [50501]  | VS-50501  |
| [50502]  | VS-50502  |
| [50501A] | VS-50501A |

| SYMBOL NO.          | PARTS NO.  | PARTS NAME | DESCRIPTION            | SYMBOL NO.  | PARTS NO.  | PARTS NAME | DESCRIPTION |
|---------------------|------------|------------|------------------------|-------------|------------|------------|-------------|
| TUBES               |            |            |                        | IC903       | 266P932010 | IC         | AN7805      |
| *                   | 251C083010 | ASSY-CRT   | RED-MONOCROME 50501    | TRANSISTORS |            |            |             |
|                     |            |            | 50502                  | Q 100       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| *                   | 251C083020 | ASSY-CRT   | GREEN-MONOCROME 50501  | Q 101       | 260P560040 | TRANSISTOR | 2SA933S-S   |
|                     |            |            | 50502                  | Q 102       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| *                   | 251C083030 | ASSY-CRT   | BLUE-MONOCROME 50501   | Q 103       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
|                     |            |            | 50502                  | Q 104       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| *                   | 251C091010 | ASSY-CRT   | RED-MONOCROME 50501A   | Q 105       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| *                   | 251C091020 | ASSY-CRT   | GREEN-MONOCROME 50501A | Q 106       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| *                   | 251C091030 | ASSY-CRT   | BLUE-MONOCROME 50501A  | Q 107       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C083040 | ASSY-CRT   | RED-MONOCROME 45501    | Q 109       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
|                     |            |            | 45502                  | Q 110       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C083050 | ASSY-CRT   | GREEN-MONOCROME 45501  | Q 2H04      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
|                     |            |            | 45502                  | Q 2H05      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C083060 | ASSY-CRT   | BLUE-MONOCROME 45501   | Q 2H06      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
|                     |            |            | 45502                  | Q 2H07      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C091040 | ASSY-CRT   | RED-MONOCROME 45501A   | Q 2H08      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C091050 | ASSY-CRT   | GREEN-MONOCROME 45501A | Q 2H09      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| *                   | 251C091060 | ASSY-CRT   | BLUE-MONOCROME 45501A  | Q 2H10      | 260P560040 | TRANSISTOR | 2SA933S-S   |
| INTEGRATED CIRCUITS |            |            |                        | Q 2H11      | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC200               | 270P347030 | IC         | CXA2095S               | Q 2H12      | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC2001              | 274P596020 | IC         | T90A13N                | Q 2K0       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC2002              | 272P658010 | IC         | MM1031XS               | Q 2030      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC203               | 270P210010 | IC         | AN7809F                | Q 2040      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC204               | 270P204010 | IC         | PA0057A                | Q 2050      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC3A1               | 272P440010 | IC         | LA4282                 | Q 2051      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC3E1               | 270P467010 | IC         | TDA9855                | Q 2052      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC401               | 270P064020 | IC         | LA7845                 | Q 206       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC5A00              | 272P106030 | IC         | UPC4570HA              | Q 208       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC5A01              | 266P154010 | IC         | UPC393C                | Q 209       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC700               | 274P762090 | IC-MOS     | M37270EFSP             | Q 210       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC7001              | 275P039020 | IC         | M65617SP-A             | Q 211       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC7002              | 272P761010 | IC         | MM1041XS               | Q 212       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC7003              | 272P658010 | IC         | MM1031XS               | Q 213       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC7004              | 270P465010 | IC         | NJM317                 | Q 214       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC701               | 274P333010 | IC-MOS     | 24C04A*P               | Q 215       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC702               | 266P130030 | IC         | PST520E                | Q 216       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC703               | 275P040090 | IC         | M38123E6SP             | Q 217       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC705               | 263P265010 | IC         | HD74HC32P              | Q 220       | 260P385020 | TRANSISTOR | 2SC2229-Y   |
| IC706               | 274P333010 | IC-MOS     | 24C04A*P               | Q 221       | 260P385020 | TRANSISTOR | 2SC2229-Y   |
| IC7601              | 270P321020 | IC         | CXA1855S               | Q 222       | 260P385020 | TRANSISTOR | 2SC2229-Y   |
| IC8C00              | 266P154010 | IC         | UPC393C                | Q 224       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC8D00              | 270P202010 | IC         | CM0001AS               | Q 225       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC8E00              | 270P202010 | IC         | CM0001AS               | Q 3A1       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC8F00              | 272P106020 | IC         | UPC4574C               | Q 3A2       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC8G00              | 270P357010 | IC         | PM0002B                | Q 3A3       | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC8W00              | 267P077020 | HIC        | STK391-020             | Q 3A4       | 260P560040 | TRANSISTOR | 2SA933S-S   |
| IC8W01              | 267P077020 | HIC        | STK391-020             | Q 3E01      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC8W02              | 267P077020 | HIC        | STK391-020             | Q 3E02      | 260P603010 | TRANSISTOR | UN4112 /2   |
| IC800               | 270P203020 | IC         | M52336ASP              | Q 3E03      | 260P632010 | TRANSISTOR | DTC124ES    |
| IC870               | 274P713010 | IC-MOS     | CD0006BD               | Q 3E04      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC9A00              | 270P466020 | IC         | KIA7809PI              | Q 5A00      | 260P797020 | TRANSISTOR | 2SD2349     |
| IC9A01              | 270P466010 | IC         | KIA7805PI              | Q 5A01      | 260P422010 | TRANSISTOR | 2SC2482     |
| IC9A02              | 270P466030 | IC         | KIA7812PI              | Q 5A02      | 260P797020 | TRANSISTOR | 2SD2349     |
| IC9A12              | 270P466010 | IC         | KIA7805PI              | Q 5A03      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC900               | 267P129010 | HIC        | STR-M6811              | Q 5A04      | 260P559050 | TRANSISTOR | 2SC1740S-E  |
| IC901               | 267P126010 | HIC        | SE130N                 | Q 5A05      | 260P559030 | TRANSISTOR | 2SC1740S-S  |
| IC902               | 272P240010 | IC         | M5237L                 | Q 5A06      | 260P560040 | TRANSISTOR | 2SA933S-S   |
|                     |            |            |                        | Q 5A07      | 260P422010 | TRANSISTOR | 2SC2482     |

**MODEL: VS-45501/VS-45502/VS-45501A/VS-50501/VS-50502/VS-50501A**

| <b>SYMBOL<br/>NO.</b> | <b>PARTS<br/>NO.</b> | <b>PARTS<br/>NAME</b> | <b>DESCRIPTION</b> | <b>SYMBOL<br/>NO.</b> | <b>PARTS<br/>NO.</b> | <b>PARTS<br/>NAME</b> | <b>DESCRIPTION</b> |
|-----------------------|----------------------|-----------------------|--------------------|-----------------------|----------------------|-----------------------|--------------------|
| Q 5A08                | 260P420O20           | TRANSISTOR            | 2SC2073-B,C        | Q 800                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         |
| Q 5H03                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | Q 9A00                | 260P646O10           | TRANSISTOR            | 2SC1845-F,E        |
| Q 5H04                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | Q 900                 | 260P559O50           | TRANSISTOR            | 2SC1740S-E         |
| Q 5H05                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | Q 904                 | 260P652O10           | TRANSISTOR            | 2SA1725            |
| Q 5H06                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | <b>DIODES</b>         |                      |                       |                    |
| Q 5H07                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 100                 | 264P502O10           | DIODE                 | HZ5ALL             |
| Q 5H08                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 101                 | 264P502O10           | DIODE                 | HZ5ALL             |
| Q 5H09                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 102                 | 264P488O20           | DIODE                 | RD13FB1            |
| Q 5H10                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 104                 | 264P470O40           | DIODE                 | RD33EB1/2          |
| Q 5H11                | 260P573O20           | TRANSISTOR            | 2SB940A-P          | D 2H00                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 5H12                | 260P574O20           | TRANSISTOR            | 2SD1264A-P         | D 210                 | 264P486O50           | DIODE                 | RD9.1FB2           |
| Q 5H13                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 211                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 5H14                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 216                 | 264P483O70           | DIODE                 | RD5.1FB1           |
| Q 5K00                | 260P664O30           | TRANSISTOR            | 2SC4636            | D 217                 | 264P502O20           | DIODE                 | HZ5BLL             |
| Q 5K01                | 260P664O30           | TRANSISTOR            | 2SC4636            | D 218                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 5K02                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 219                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 5K03                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 220                 | 264P483O80           | DIODE                 | RD5.1FB2           |
| Q 5K04                | 260P559O50           | TRANSISTOR            | 2SC1740S-E         | D 221                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6B0                 | 261P004O10           | TRANSISTOR            | 2SC3271F-N,P       | D 222                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6B1                 | 260P469O30           | TRANSISTOR            | 2SA1321            | D 223                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6B2                 | 260P307O20           | TRANSISTOR            | 2SC3334            | D 224                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6G0                 | 261P004O10           | TRANSISTOR            | 2SC3271F-N,P       | D 225                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6G1                 | 260P469O30           | TRANSISTOR            | 2SA1321            | D 226                 | 264P501O50           | DIODE                 | HZ3BLL             |
| Q 6G2                 | 260P307O20           | TRANSISTOR            | 2SC3334            | D 227                 | 264P502O30           | DIODE                 | HZ5CCLL            |
| Q 6G5                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 228                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6R0                 | 261P004O10           | TRANSISTOR            | 2SC3271F-N,P       | D 229                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6R1                 | 260P469O30           | TRANSISTOR            | 2SA1321            | D 230                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 6R2                 | 260P307O20           | TRANSISTOR            | 2SC3334            | D 3A3                 | 264P501O40           | DIODE                 | HZ3ALL             |
| Q 7A00                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 3A4                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7A01                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 3A5                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7C00                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 3A6                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7C10                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 3A7                 | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7000                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 3E00                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7006                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 401                 | 264D056O20           | DIODE                 | ERB12-02RK/3       |
| Q 7007                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 402                 | 264D056O20           | DIODE                 | ERB12-02RK/3       |
| Q 7008                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 403                 | 264D056O20           | DIODE                 | ERB12-02RK/3       |
| Q 701                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A00                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7011                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A02                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7013                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A03                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7014                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A04                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7016                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A06                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7017                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5A07                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 7018                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5A09                | 264P244O30           | DIODE                 | HZT22-02           |
| Q 7019                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A11                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 703                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5A20                | 264P469O70           | DIODE                 | RD27EB4/2          |
| Q 704                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A21                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 705                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5A22                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 706                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5A23                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 708                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5H00                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 709                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5H01                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 710                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5H02                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 711                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5H03                | 264D056O20           | DIODE                 | ERB12-02RK/3       |
| Q 712                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5H04                | 264D056O20           | DIODE                 | ERB12-02RK/3       |
| Q 713                 | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5H09                | 264P045O40           | DIODE                 | 1S2471OM           |
| Q 714                 | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5K01                | 264P528O30           | DIODE                 | RP 1H              |
| Q 7601                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5K02                | 264P543O10           | DIODE                 | EG01               |
| Q 7602                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         | D 5K03                | 264P543O10           | DIODE                 | EG01               |
| Q 7603                | 260P560O40           | TRANSISTOR            | 2SA933S-S          | D 5K10                | 264P528O30           | DIODE                 | RP 1H              |
| Q 7670                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         |                       |                      |                       |                    |
| Q 7671                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         |                       |                      |                       |                    |
| Q 8F00                | 260P559O30           | TRANSISTOR            | 2SC1740S-S         |                       |                      |                       |                    |

| SYMBOL<br>NO. | PARTS<br>NO. | PARTS<br>NAME | DESCRIPTION  | SYMBOL<br>NO. | PARTS<br>NO. | PARTS<br>NAME        | DESCRIPTION   |
|---------------|--------------|---------------|--------------|---------------|--------------|----------------------|---------------|
| D 6B0         | 264P045040   | DIODE         | 1S24710M     | D 910         | 264P722010   | DIODE                | SF64          |
| D 6B3         | 264P045040   | DIODE         | 1S24710M     | D 912         | 264P724010   | DIODE                | STF14         |
| D 6G0         | 264P045040   | DIODE         | 1S24710M     | D 913         | 264P722010   | DIODE                | SF64          |
| D 6G3         | 264P045040   | DIODE         | 1S24710M     | D 914         | 264P718010   | DIODE                | FR155         |
| D 6R0         | 264P045040   | DIODE         | 1S24710M     | FILTERS       |              |                      |               |
| D 6R3         | 264P045040   | DIODE         | 1S24710M     |               |              |                      |               |
| D 600         | 264P457080   | DIODE         | RD3.3EB1     |               |              |                      |               |
| D 7A00        | 264P212020   | LED           | LN31GPH      | CF200         | 299P128010   | CERAMIC-OSC          | CSB500F2      |
| D 7001        | 264P045040   | DIODE         | 1S24710M     | DELAY LINES   |              |                      |               |
| D 7002        | 264P045040   | DIODE         | 1S24710M     |               |              |                      |               |
| D 701         | 264P486020   | DIODE         | RD8.2FB3     | DL201         | 337P134010   | DELAY-LINE           | SDL-4256      |
| D 702         | 264P483070   | DIODE         | RD5.1FB1     | DL5H01        | 337P147020   | DELAY-LINE           |               |
| D 703         | 264P483070   | DIODE         | RD5.1FB1     | DL5H02        | 337P147020   | DELAY-LINE           |               |
| D 704         | 264P483070   | DIODE         | RD5.1FB1     | COILS         |              |                      |               |
| D 706         | 264P483070   | DIODE         | RD5.1FB1     |               |              |                      |               |
| D 707         | 264P483070   | DIODE         | RD5.1FB1     |               |              |                      |               |
| D 708         | 264P483070   | DIODE         | RD5.1FB1     |               |              |                      |               |
| D 709         | 264P483070   | DIODE         | RD5.1FB1     |               |              |                      |               |
| D 715         | 264P045040   | DIODE         | 1S24710M     |               | 330P209040   | DEFLECTION YOKE      | VZ4-7-90      |
| D 716         | 264P045040   | DIODE         | 1S24710M     |               | 338P046010   | CPM-ASSY             | DBV4001M      |
| D 717         | 264P045040   | DIODE         | 1S24710M     | L 100         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 718         | 264P483070   | DIODE         | RD5.1FB1     | L 101         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 719         | 264D056020   | DIODE         | ERB12-02RK/3 | L 102         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 720         | 264P483070   | DIODE         | RD5.1FB1     | L 103         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 721         | 264P483070   | DIODE         | RD5.1FB1     | L 104         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 722         | 264P483070   | DIODE         | RD5.1FB1     | L 105         | 325C168070   | COIL-PEAKING         | 1000MH-J      |
| D 723         | 264P483070   | DIODE         | RD5.1FB1     | L 106         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 724         | 264P483070   | DIODE         | RD5.1FB1     | L 107         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 725         | 264P483070   | DIODE         | RD5.1FB1     | L 108         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 727         | 264P483070   | DIODE         | RD5.1FB1     | L 109         | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 728         | 264P045040   | DIODE         | 1S24710M     | L 110         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 729         | 264D056020   | DIODE         | ERB12-02RK/3 | L 111         | 325C168070   | COIL-PEAKING         | 1000MH-J      |
| D 730         | 264P045040   | DIODE         | 1S24710M     | L 112         | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 731         | 264P045040   | DIODE         | 1S24710M     | L 201         | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 7601        | 264P485060   | DIODE         | RD7.5FB2     | L 2010        | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 7602        | 264P485060   | DIODE         | RD7.5FB2     | L 2011        | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 7603        | 264P485060   | DIODE         | RD7.5FB2     | L 2012        | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 7604        | 264P486060   | DIODE         | RD9.1FB3     | L 2031        | 325C121080   | COIL-PEAKING         | 27MH-K        |
| D 7605        | 264P486060   | DIODE         | RD9.1FB3     | L 2040        | 325C121080   | COIL-PEAKING         | 27MH-K        |
| D 7606        | 264P045040   | DIODE         | 1S24710M     | L 2050        | 325C121080   | COIL-PEAKING         | 27MH-K        |
| D 7607        | 264P045040   | DIODE         | 1S24710M     | L 2069        | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 7608        | 264P486060   | DIODE         | RD9.1FB3     | L 211         | 325C122050   | COIL-PEAKING         | 100MH-K       |
| D 7609        | 264P486060   | DIODE         | RD9.1FB3     | L 212         | 325C121030   | COIL-PEAKING         | 10MH-K        |
| D 8C01        | 264P045040   | DIODE         | 1S24710M     | L 214         | 325C166070   | COIL-PEAKING         | 22MH-J        |
| D 8C02        | 264P425010   | DIODE         | ISS88        | L 215         | 325C121090   | COIL-PEAKING         | 33MH-K        |
| D 800         | 264P483080   | DIODE         | RD5.1FB2     | L 3F01        | 325C111030   | COIL-PEAKING         | 10MH-K        |
| D 9A00        | 264P718020   | DIODE         | FR156        | L 401         | 321C130010   | COIL-RF              | 2.0MH +-15%   |
| D 9A01        | 264P720010   | DIODE         | KBP202G      | L 411         | 325C401030   | COIL-PEAKING         | 10MH-J        |
| D 9A02        | 264P470080   | DIODE         | EQA02-32C/2  | L 412         | 411P001010   | LEAD-FERRITE         |               |
| D 9A03        | 264P045040   | DIODE         | 1S24710M     | L 5A00        | 351P156020   | COIL-CHOKE           | YT-4361-1 2.4 |
| D 9A04        | 264P045040   | DIODE         | 1S24710M     | L 5A01        | 351P156010   | COIL-CHOKE           | YT-4360-1 3.1 |
| D 9A05        | 264P045040   | DIODE         | 1S24710M     | L 5A02        | 333P040060   | COIL-HORIZ-LINEARITY |               |
| D 9A06        | 264P825010   | DIODE         | ERA15-02     | L 5A03        | 411P001010   | LEAD-FERRITE         |               |
| D 900         | 264P721010   | DIODE         | TS6B06G      | L 5A04        | 411P001010   | LEAD-FERRITE         |               |
| D 901         | 264P487080   | DIODE         | RD12FB2      | L 5A05        | 321C030070   | COIL-RF              | 3.3MH-K       |
| D 903         | 264P522010   | DIODE         | RU 1P        | L 5A06        | 411P001010   | LEAD-FERRITE         |               |
| D 904         | 264P724010   | DIODE         | STF14        | L 5H00        | 411D009020   | CORE-FERRITE         |               |
| D 906         | 264P578010   | DIODE         | RG 2A        | L 5K00        | 411P001040   | LEAD-FERRITE         |               |
| D 907         | 264P588010   | DIODE         | FML-G16S     | L 6B0         | 325C402020   | COIL-PEAKING         | 56MH-J        |
| D 908         | 264P722010   | DIODE         | SF64         | L 6B1         | 325C402020   | COIL-PEAKING         | 56MH-J        |
| D 909         | 264P719010   | DIODE         | FR302        | L 6G0         | 325C402020   | COIL-PEAKING         | 56MH-J        |
|               |              |               |              | L 6G1         | 325C402020   | COIL-PEAKING         | 56MH-J        |



**MODEL: VS-45501/VS-45502/VS-45501A/VS-50501/VS-50502/VS-50501A**

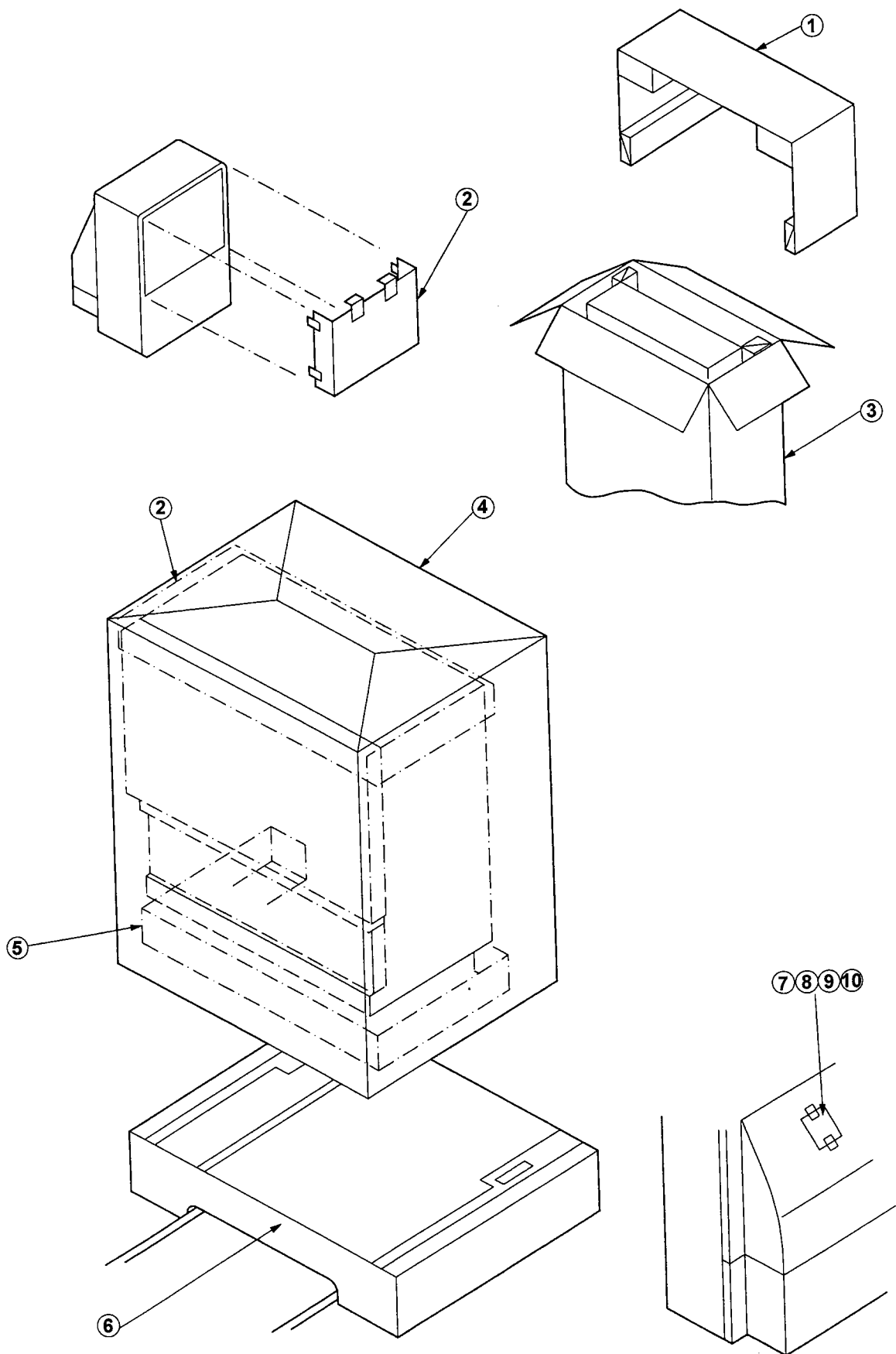
| SYMBOL<br>NO. | PARTS<br>NO. | PARTS<br>NAME | DESCRIPTION  | SYMBOL<br>NO. | PARTS<br>NO. | PARTS<br>NAME    | DESCRIPTION |
|---------------|--------------|---------------|--------------|---------------|--------------|------------------|-------------|
| L 6R0         | 325C402020   | COIL-PEAKING  | 56MH-J       | T 5A01        | 336P031010   | COIL-HORIZ-DRIVE |             |
| L 6R1         | 325C402020   | COIL-PEAKING  | 56MH-J       | T 5A02        | 336P031010   | COIL-HORIZ-DRIVE |             |
| L 7000        | 325C110050   | COIL-PEAKING  | 2.2MH-K      |               |              |                  |             |
| L 7001        | 325C110030   | COIL-PEAKING  | 1.5MH-K      |               |              |                  |             |
| L 7002        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7003        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7004        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7006        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7007        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7008        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 701         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 702         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 703         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 704         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 705         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 706         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 707         | 325C165070   | COIL-PEAKING  | 3.3MH-J      |               |              |                  |             |
| L 708         | 325C401000   | COIL-PEAKING  | 5.6MH-J      |               |              |                  |             |
| L 709         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 710         | 325C165070   | COIL-PEAKING  | 3.3MH-J      |               |              |                  |             |
| L 711         | 325C166030   | COIL-PEAKING  | 10MH-J       |               |              |                  |             |
| L 714         | 321C114070   | COIL-RF       | 6800MH-J     |               |              |                  |             |
| L 715         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 716         | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 7601        | 325C166030   | COIL-PEAKING  | 10MH-J       |               |              |                  |             |
| L 7602        | 325C166030   | COIL-PEAKING  | 10MH-J       |               |              |                  |             |
| L 77A1        | 325C121030   | COIL-PEAKING  | 10MH-K       |               |              |                  |             |
| L 8D01        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8E01        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8F01        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8F02        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W01        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W02        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W03        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W04        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W05        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 8W06        | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 800         | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 802         | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 803         | 321C031040   | COIL-RF       | 10MH-K       |               |              |                  |             |
| L 900         | 351P139010   | LINE-FILTER   | SS35V-30082  |               |              |                  |             |
| L 902         | 351P155010   | COIL          | YT-4388-1    |               |              |                  |             |
| L 903         | 351P155010   | COIL          | YT-4388-1    |               |              |                  |             |
| L 904         | 351P155010   | COIL          | YT-4388-1    |               |              |                  |             |
| L 905         | 351P155010   | COIL          | YT-4388-1    |               |              |                  |             |
| L 907         | 321C142030   | COIL-RF       | 68MH-K 9X9.5 |               |              |                  |             |
| L 908         | 321C142030   | COIL-RF       | 68MH-K 9X9.5 |               |              |                  |             |
| L 909         | 411P001010   | LEAD-FERRITE  |              |               |              |                  |             |
| L 910         | 411P001010   | LEAD-FERRITE  |              |               |              |                  |             |
| L 911         | 411P001010   | LEAD-FERRITE  |              |               |              |                  |             |
| L 912         | 411P001060   | LEAD-FERRITE  |              |               |              |                  |             |
| L 913         | 411D009020   | CORE-FERRITE  |              |               |              |                  |             |
| L 914         | 411D009020   | CORE-FERRITE  |              |               |              |                  |             |
| L 925         | 411D009020   | CORE-FERRITE  |              |               |              |                  |             |
| LC2091        | 409P402030   | EMI-FILTER    | FZ103N100    |               |              |                  |             |
| LC2092        | 409P402030   | EMI-FILTER    | FZ103N100    |               |              |                  |             |
| LC701         | 409P402010   | EMI-FILTER    | B101M100     |               |              |                  |             |
| LC702         | 409P402010   | EMI-FILTER    | B101M100     |               |              |                  |             |
| LC703         | 409P402010   | EMI-FILTER    | B101M100     |               |              |                  |             |
| LC704         | 409P402010   | EMI-FILTER    | B101M100     |               |              |                  |             |
|               |              |               |              |               |              |                  |             |

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| SYMBOL NO.              | PARTS NO.  | PARTS NAME   | DESCRIPTION        | SYMBOL NO. | PARTS NO.              | PARTS NAME | DESCRIPTION               |
|-------------------------|------------|--------------|--------------------|------------|------------------------|------------|---------------------------|
| R 927                   | 109D036030 | R-COMP       | 1/2W 1.0M-K        |            | 449C134010             | SOCKET-CRT |                           |
| R 928                   | 109D036030 | R-COMP       | 1/2W 1.0M-K        |            | 480P039010             | SPEAKER    | A(102-118)FL-1            |
| R 931                   | 109D021070 | R-SOLID      | 1/2W 1.5M-K        |            | AG5K00                 | 224D019040 | AIR-GAP 2KV               |
| CAPACITORS AND TRIMMERS |            |              |                    |            | AG900                  | 224D019040 | AIR-GAP 2KV               |
| C 408                   | 189P071050 | C-M-PP       | 200V 0.33MF-J      |            | F 900                  | 283D060020 | FUSE-UL S5A               |
| C 5A04                  | 172P172070 | C-M-PP       | 1600V 4300PF-J     |            | F 901                  | 283D038070 | FUSE-UL S4A               |
| C5A00                   | 172P081080 | C-P-PP       | 200V 0.033MF-K     |            | F 902                  | 283D038070 | FUSE-UL S4A               |
| C 5A05                  | 172P172070 | C-M-PP       | 1600V 4300PF-J     |            | K 900                  | 287P049070 | RELAY-POWER DJ12D1-0(M)   |
| C5A12                   | 172P330071 | C-P          | 50V 3300PF-J       |            | PC900                  | 268P033010 | PHOTO-COUPLER ON3161-R    |
| C 5A13                  | 172P170090 | C-M-PP       | 1600V 4700PF-J     |            | PJ701                  | 451C129010 | JACK-MICROPHONE           |
| C 5A14                  | 172P170090 | C-M-PP       | 1600V 4700PF-J     |            | PJ7601                 | 440C323010 | PIN JACK BOARD 3PIN       |
| C 5A16                  | 189P081060 | C-M-PP       | 200V 0.15MF-J      |            | PJ7602                 | 440C186020 | JACK-BOARD PINX6 & SX2    |
| C 5A17                  | 189P081060 | C-M-PP       | 200V 0.15MF-J      |            | PJ79A0                 | 440C231010 | JACK-BOARD PINX3 & SX1    |
| C 5A27                  | 189P071080 | C-M-PP       | 200V 0.47MF-J      |            | PT7A00                 | 264P723010 | LED SFH310-3              |
| C5A32                   | 72P262051  | C-M-P        | 50V 0.1MF-J        |            | TU101                  | 295P420030 | TUNER ENG26104G           |
| C 5A35                  | 154P264060 | C-C          | 3.15KV 470P-K      |            | TU102                  | 295P420030 | TUNER ENG26104G           |
| C 5K00                  | 172P171060 | C-M-PP       | 1600V 0.018MF-J    |            | X 200                  | 285P066010 | QUARTZ-CRYSTAL 3.5795MHZ  |
| C 5K01                  | 172P171060 | C-M-PP       | 1600V 0.018MF-J    |            | X 3E1                  | 299P208010 | CERAMIC-OSC C5B503F58     |
| C 900                   | 189P153040 | C-M-P-AC     | AC250V 0.1MF-M     |            | X 7000                 | 285P069020 | QUARTZ-CRYSTAL HC-49/U    |
| C 901                   | 189P067060 | C-C-AC       | B VA1 1000PF-M     |            | X 701                  | 285P039020 | QUARTZ-CRYSTAL 8.00MHZ    |
| C 902                   | 189P067060 | C-C-AC       | B VA1 1000PF-M     |            | X 702                  | 285P326010 | QUARTZ-CRYSTAL 6.30MHZ    |
| C 903                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | Z 7706                 | 939P296060 | UNIT-PREAMP HC-437ME      |
| C 904                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | Z 900                  | 283P039020 | FUSE SSFR 6.3A            |
| C 905                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | Z 901                  | 283P039020 | FUSE SSFR 6.3A            |
| C 906                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | Z 902                  | 283P030090 | FUSE SSFR 4A              |
| C 907                   | 185D063030 | C-ELE        | H180V 820MF-M 105C |            | Z 903                  | 283P039020 | FUSE SSFR 6.3A            |
| C 908                   | 185D063030 | C-ELE        | H180V 820MF-M 105C |            | Z 905                  | 283P030060 | FUSE SSFR 2A              |
| C 917                   | 185D063020 | C-ELE        | H180V 470MF-M 105C |            | PRINTED CIRCUIT BOARDS |            |                           |
| C 920                   | 185D062050 | C-ELE        | H50V 4700MF-M      |            | *                      | 935D326001 | ASSY-PWB-AV               |
| C 928                   | 185D062050 | C-ELE        | H50V 4700MF-M      |            | *                      | 935D317001 | ASSY-PWB-CONTROL          |
| C 931                   | 189P153040 | C-M-P-AC     | AC250V 0.1MF-M     |            | *                      | 935C747001 | ASSY-PWB-CONV 50501       |
| C 938                   | 189P152050 | C-M-P-AC     | AC125V 4700PF-M    |            | *                      | 935C747002 | ASSY-PWB-CONV 45501       |
| C 944                   | 189P152050 | C-M-P-AC     | AC125V 4700PF-M    |            | *                      | 935C750001 | ASSY-PWB-CRT              |
| C 952                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | *                      | 935D323001 | ASSY-PWB-DBF 50501        |
| C 953                   | 189P134080 | C-C-AC       | F VA1 2200PF-M     |            | *                      | 935D323002 | ASSY-PWB-DBF 45501        |
| VC7000                  | 202P109010 | C-TRIMMER    | 3PF-10PF           |            | *                      | 935D321001 | ASSY-PWB-FRONT            |
| SWITCHES                |            |              |                    |            | *                      | 935C745001 | ASSY-PWB-MAIN 50501       |
| S 7A00                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935C745002 | ASSY-PWB-MAIN 45501       |
| S 7A01                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935D314001 | ASSY-PWB-PIP/APT          |
| S 7A02                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935D316001 | ASSY-PWB-PREAMP           |
| S 7A03                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935C746001 | ASSY-PWB-SIGNAL           |
| S 7A04                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935C746006 | ASSY-PWB-SIGNAL 45501A    |
| S 7A05                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | *                      | 935D354001 | ASSY-PWB-SVM              |
| S 7A06                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            | MECHANICAL PARTS       |            |                           |
| S 7A07                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            |                        | 669D212010 | SCREW-TB-BIND 3X12 *10    |
| S 7A08                  | 432P100010 | SW-KEY-BOARD | 1-1 H=4.3          |            |                        | 669D220030 | SCREW-TB 3X10 46LA005 *10 |
| TU 103                  | 295P421020 | 2RF-SW       | ENPE624            |            |                        | 669D220060 | SCREW-TB 3X16 46LA005 *10 |
| MISCELLANEOUS           |            |              |                    |            |                        | 669D221040 | SCREW-TB 4X12 46LA005 *10 |
|                         | 453B027010 | CAP-ANODE    |                    |            |                        |            |                           |
|                         | 453B027020 | CAP-ANODE    |                    |            |                        |            |                           |
|                         | 767D048030 | MIRROR       | VS-50501           |            |                        |            |                           |
|                         | 767C048040 | MIRROR       | VS-45501           |            |                        |            |                           |

| SYMBOL<br>NO.  | PARTS<br>NO. | PARTS<br>NAME     | DESCRIPTION | SYMBOL<br>NO.                 | PARTS<br>NO. | PARTS<br>NAME    | DESCRIPTION     |
|----------------|--------------|-------------------|-------------|-------------------------------|--------------|------------------|-----------------|
| COSMETIC PARTS |              |                   |             | PACKING PARTS AND ACCESSORIES |              |                  |                 |
|                | 246C160O20   | AC-POWER-CORD     |             | 1                             | 802B620010   | PACKING CASE     | 45501           |
|                | 740A365O10   | CABINET           | 50501       | 1                             | 802B620O30   | PACKING CASE     | 50501           |
|                | 740A383O10   | CABINET           | 45501       | 2                             | 829D176O20   | PACKING SHEET    | 45501/50501     |
|                | 701B360O20   | FRAME-SCREEN      | 50501       | 3                             | 802B610010   | PACKING CASE     | 45501           |
|                | 701B363O20   | FRAME-SCREEN S    | 50501       | 3                             | 802B610O30   | PACKING CASE     | 50501           |
|                | 701B360O10   | FRAME-SCREEN      | 45501       | 4                             | 831C060O40   | PACKING-BAG      | 45501/50501     |
|                | 701B363O10   | FRAME-SCREEN S    | 45501       | 5                             | 829D126O90   | PACKING-SHEET    | 45501/50501     |
|                | 622C53O10    | HOLDER-SCREEN     | 50501       | 6                             | 802B630O10   | PACKING TRAY     | 45501           |
|                | 622D539O50   | CUSHION           | 50501       | 6                             | 802B630O30   | PACKING TRAY     | 50501           |
|                | 622D673O10   | CUSHION           | 50501       | 7                             | 831D191O30   | PACKING-BAG      | 45501/50501     |
|                | 700C245O60   | BACK BOARD        | 50501       | 8                             | 871D223O10   | IB               | 50501           |
|                | 622C053O20   | HOLDER-SCREEN     | 45501       | 9                             | 242D266O40   | CABLE            | PLUG-PLUG (3.5) |
|                | 622D539O20   | CUSHION           | 45501       | 10                            | 290P080O20   | REMOTE HAND UNIT | 50501           |
|                | 622D673O20   | CUSHION           | 45501       |                               |              |                  |                 |
|                | 700C245O80   | BACK BOARD        | 45501       |                               |              |                  |                 |
|                | 700C240O90   | BACK BOARD        | 45501A      |                               |              |                  |                 |
|                | 641D173O10   | CLIP              | AC-PWR-CORD |                               |              |                  |                 |
|                | 761C273O10   | DOOR-CATCH        | 45501/50501 |                               |              |                  |                 |
|                | 703B024O10   | DOOR              | 50501       |                               |              |                  |                 |
|                | 720C188O10   | COVER-FRONT       | 50501       |                               |              |                  |                 |
|                | 702A375O20   | PANEL-CONTROL     | 50501       |                               |              |                  |                 |
|                | 702A375O10   | PANEL-CONTROL     | 45501       |                               |              |                  |                 |
|                | 761A102O30   | GRILLE-SPEAKER    | 50501       |                               |              |                  |                 |
|                | 761A148O10   | GRILLE-SPEAKER    | 45501       |                               |              |                  |                 |
|                | 490P138O10   | LENS UNIT         | 45501/50501 |                               |              |                  |                 |
|                | 490P138O20   | LENS UNIT         | 45501/50501 |                               |              |                  |                 |
|                | 490P138O30   | LENS UNIT         | 45501/50501 |                               |              |                  |                 |
|                | 490P154O10   | LENS UNIT         | 45501/50501 |                               |              |                  |                 |
|                | 491P031O70   | SCREEN-LENTICULAR | 50501       |                               |              |                  |                 |
|                | 491P043O80   | LENS-FRESNEL      | 50501       |                               |              |                  |                 |
|                | 491P035O50   | SCREEN-LENTICULAR | 45501       |                               |              |                  |                 |
|                | 491P044O80   | LENS-FRESNEL      | 45501       |                               |              |                  |                 |
|                | 702A377O10   | SCREEN CAP        | 45501/50501 |                               |              |                  |                 |
|                | 702A377O20   | SCREEN CAP        | 45501/50501 |                               |              |                  |                 |

## PACKAGING ITEMS







## LEAD DRESS

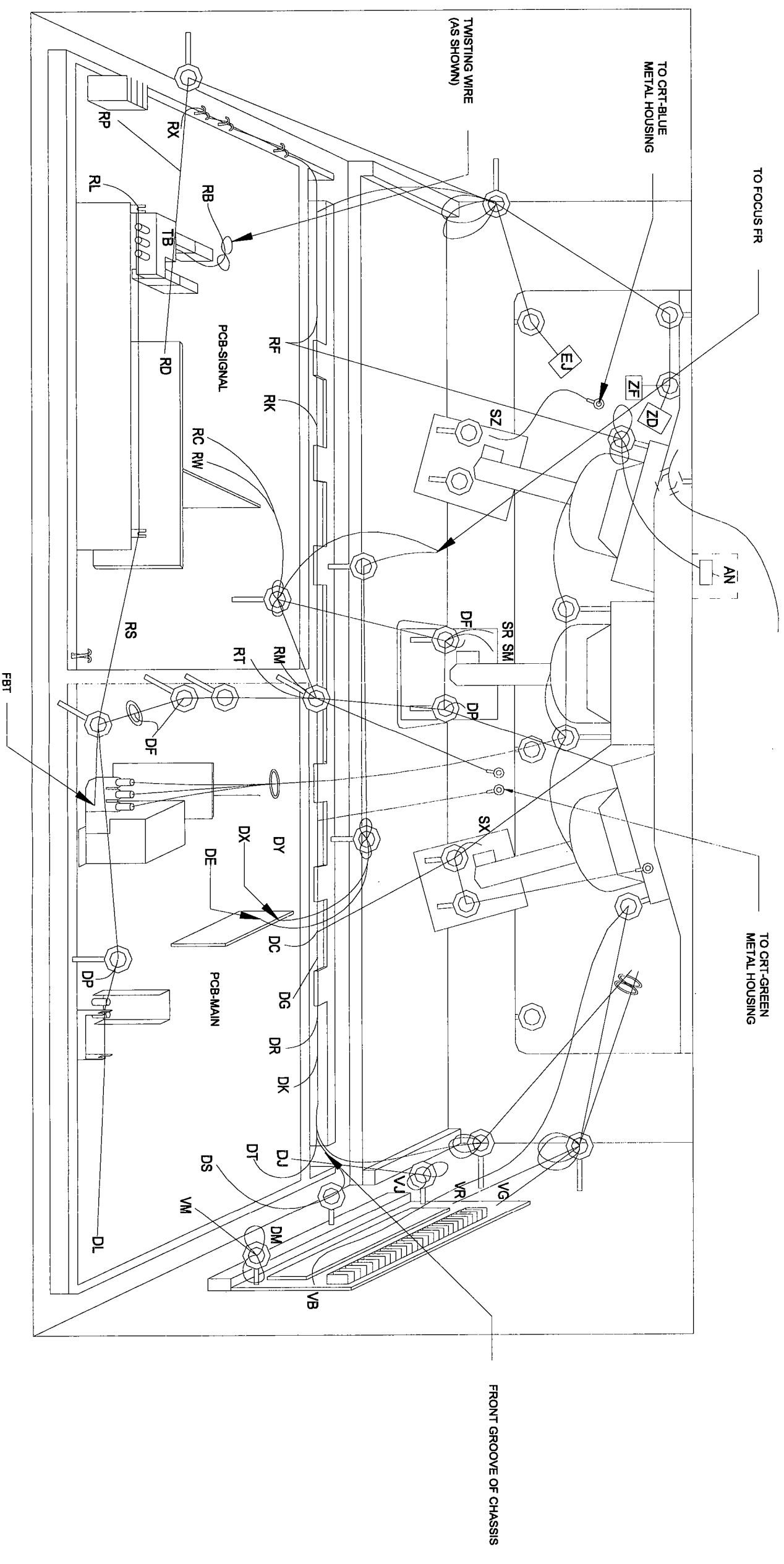
**CAUTION:**

THE INNER WIRES ARE CLAMPED SO THAT THEY DO NOT COME CLOSE TO HEAT GENERATING OR HIGH VOLTAGE PARTS. AFTER SERVICING, ROUTE ALL WIRES IN THEIR ORIGINAL POSITIONS.

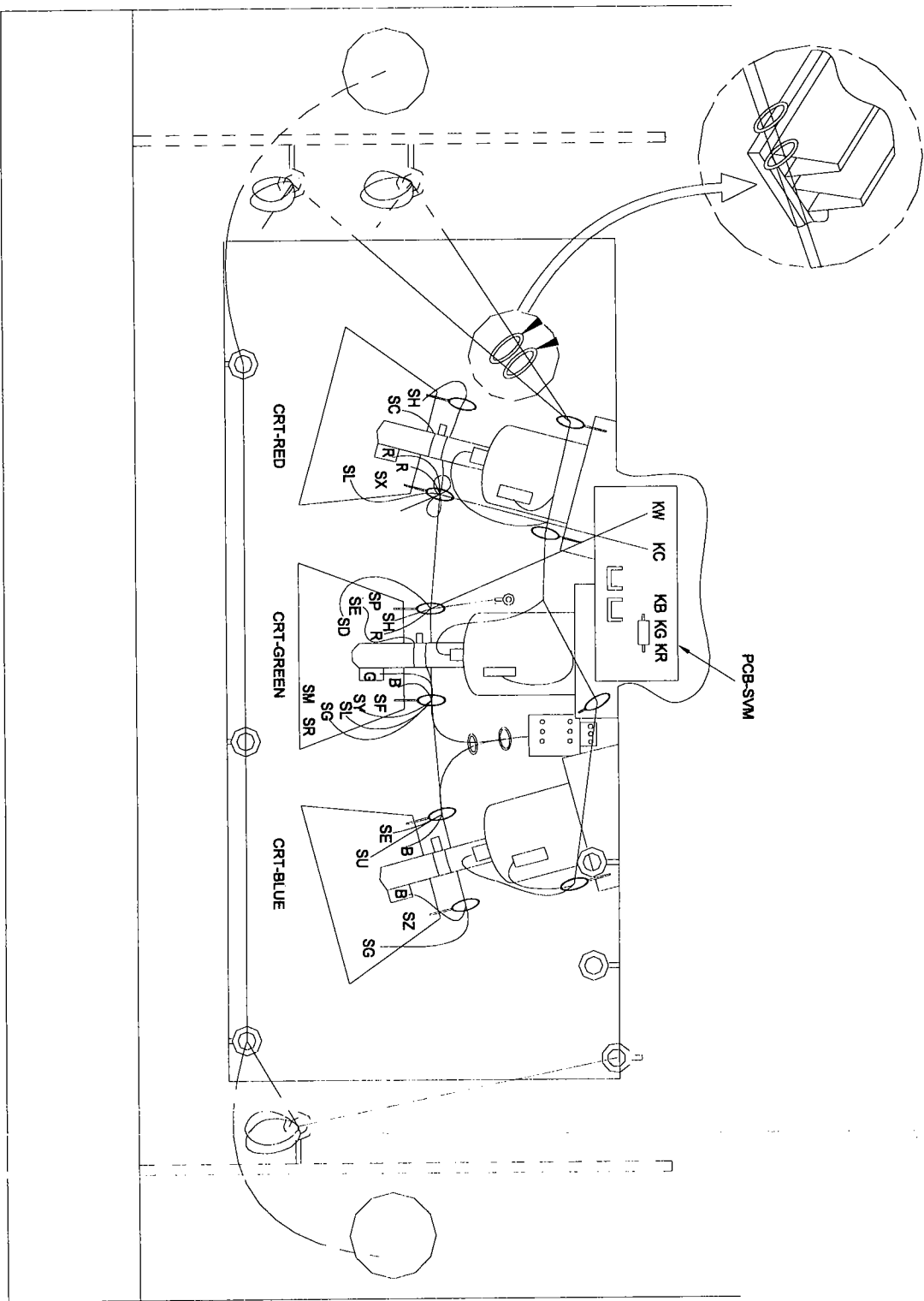
**Note:**

The Anode Lead Wires are routed so that no tension is applied to the Anode Caps. If the routes of the Anode Lead Wires are changed during service, return them to their original positions. Clamp the Lead Wires along the clamping path as shown in the figure below.

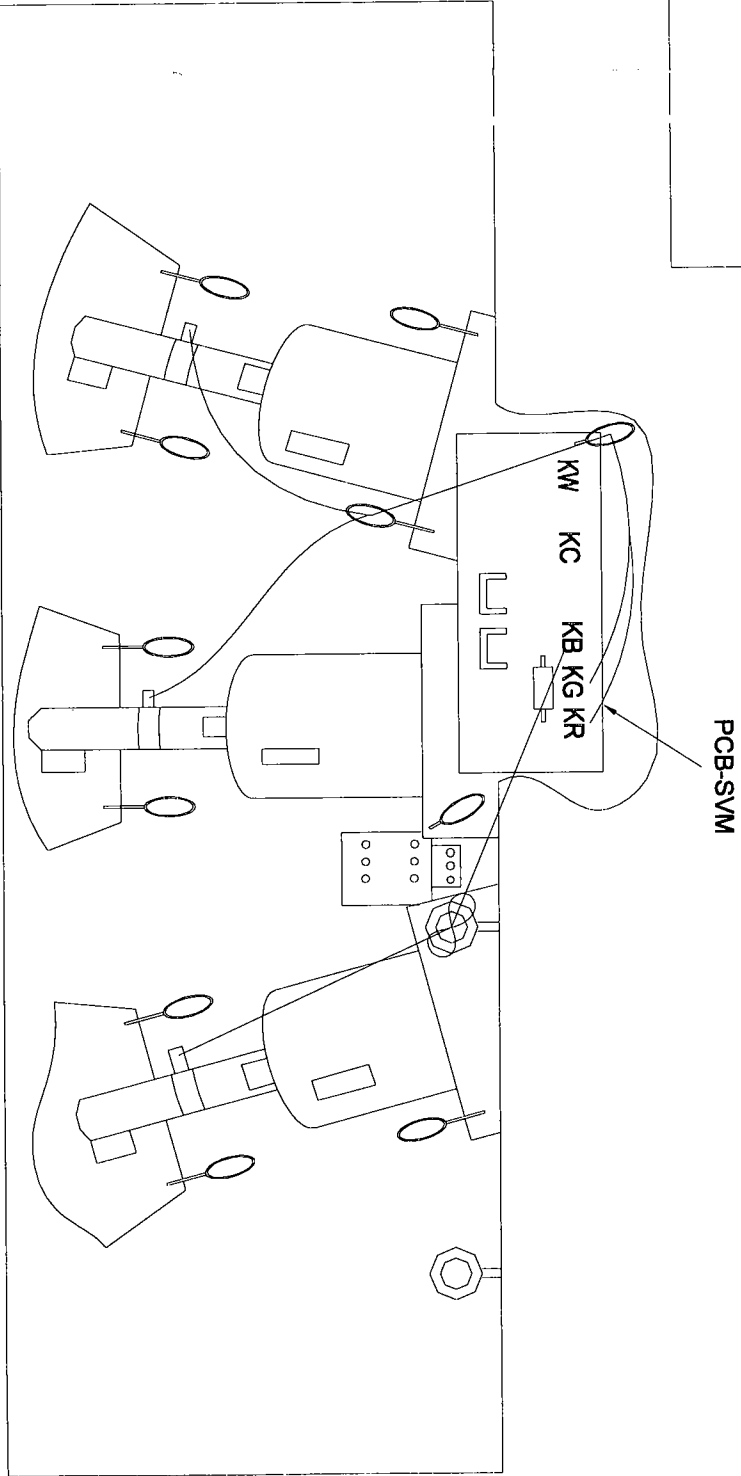
Insure that the Lead Wires are not slack.



**[REAR VIEW]**



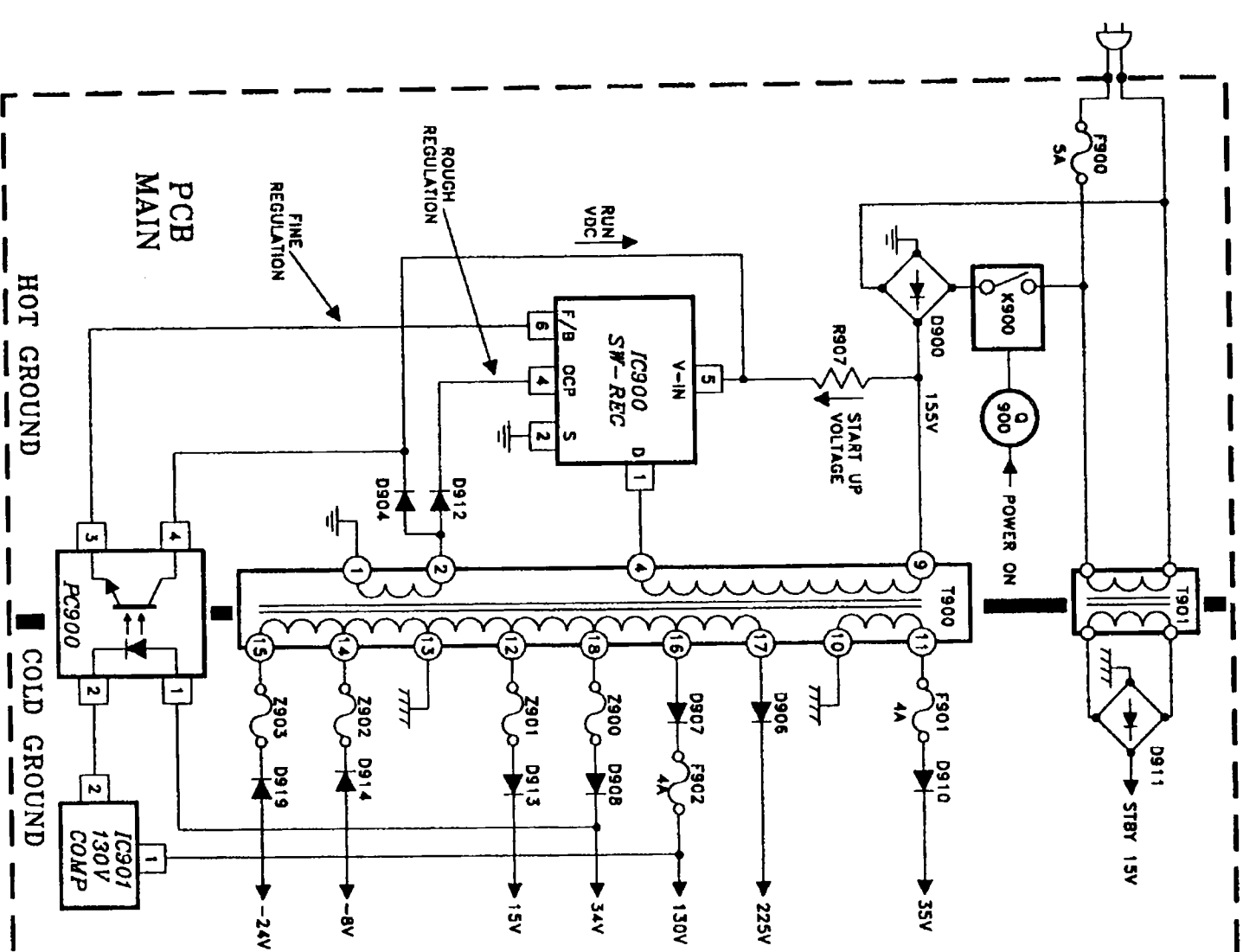
[FRONT VIEW]

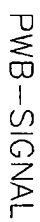


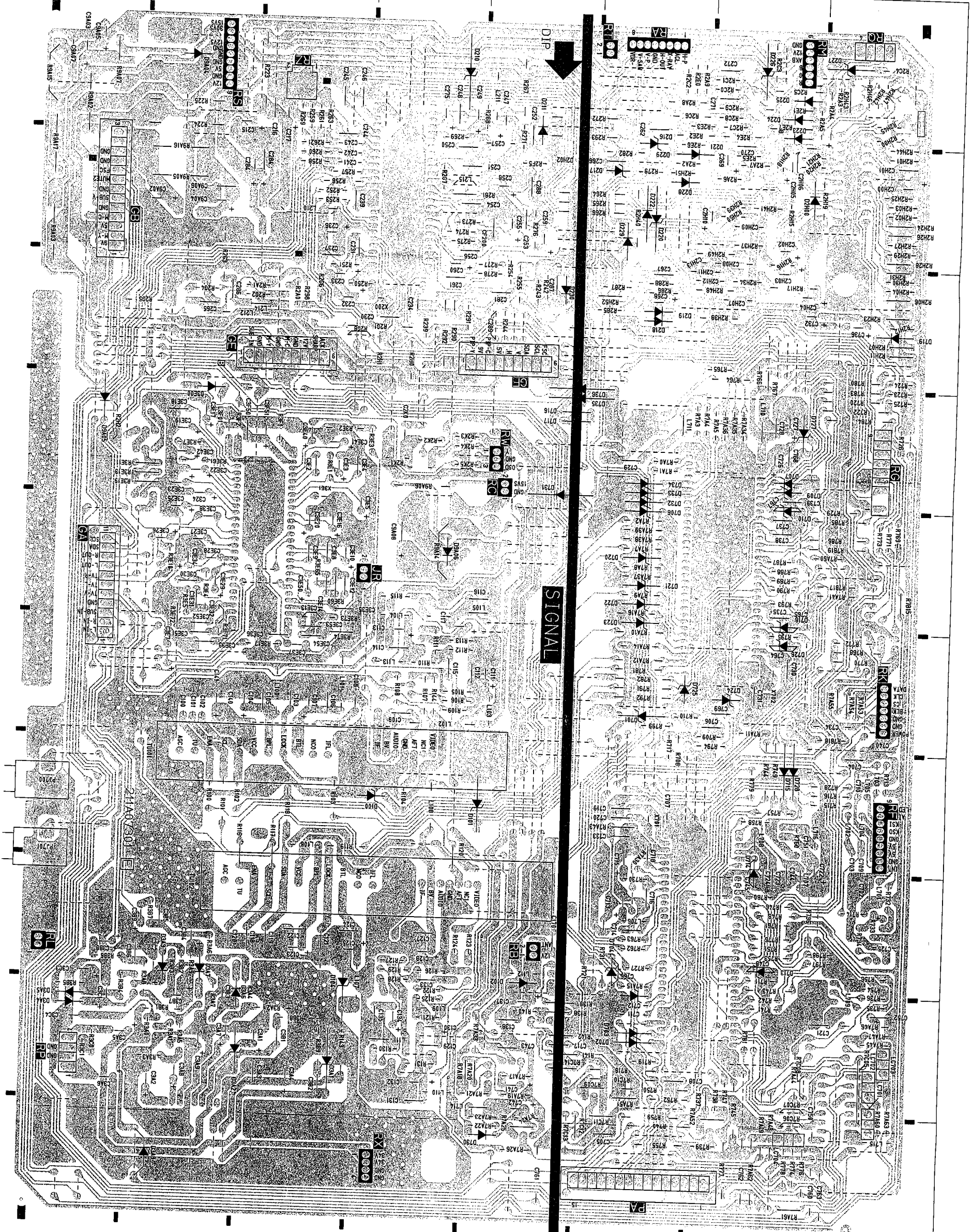
[FRONT VIEW / PCB-SVM]



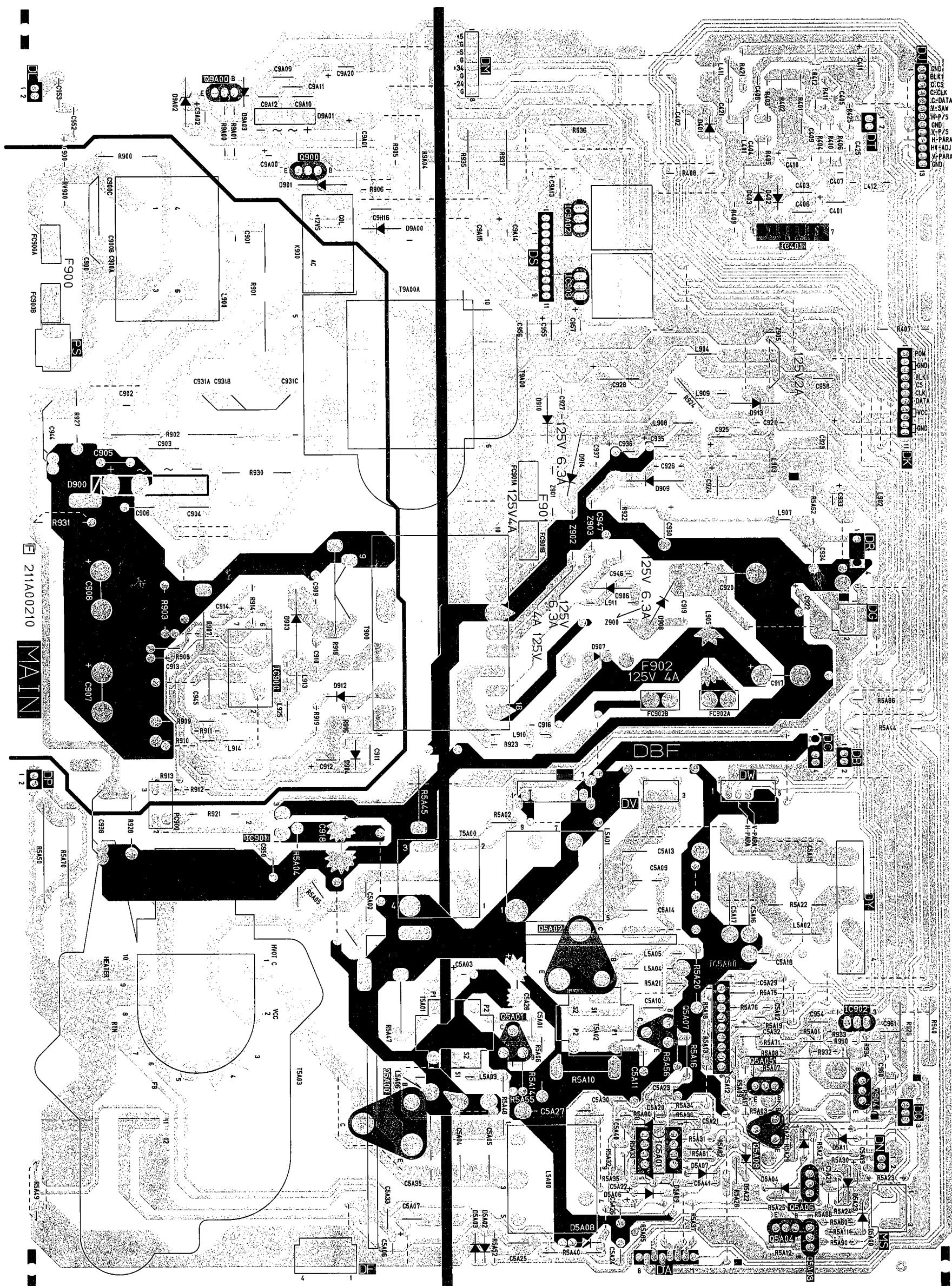
## DEFLECTION





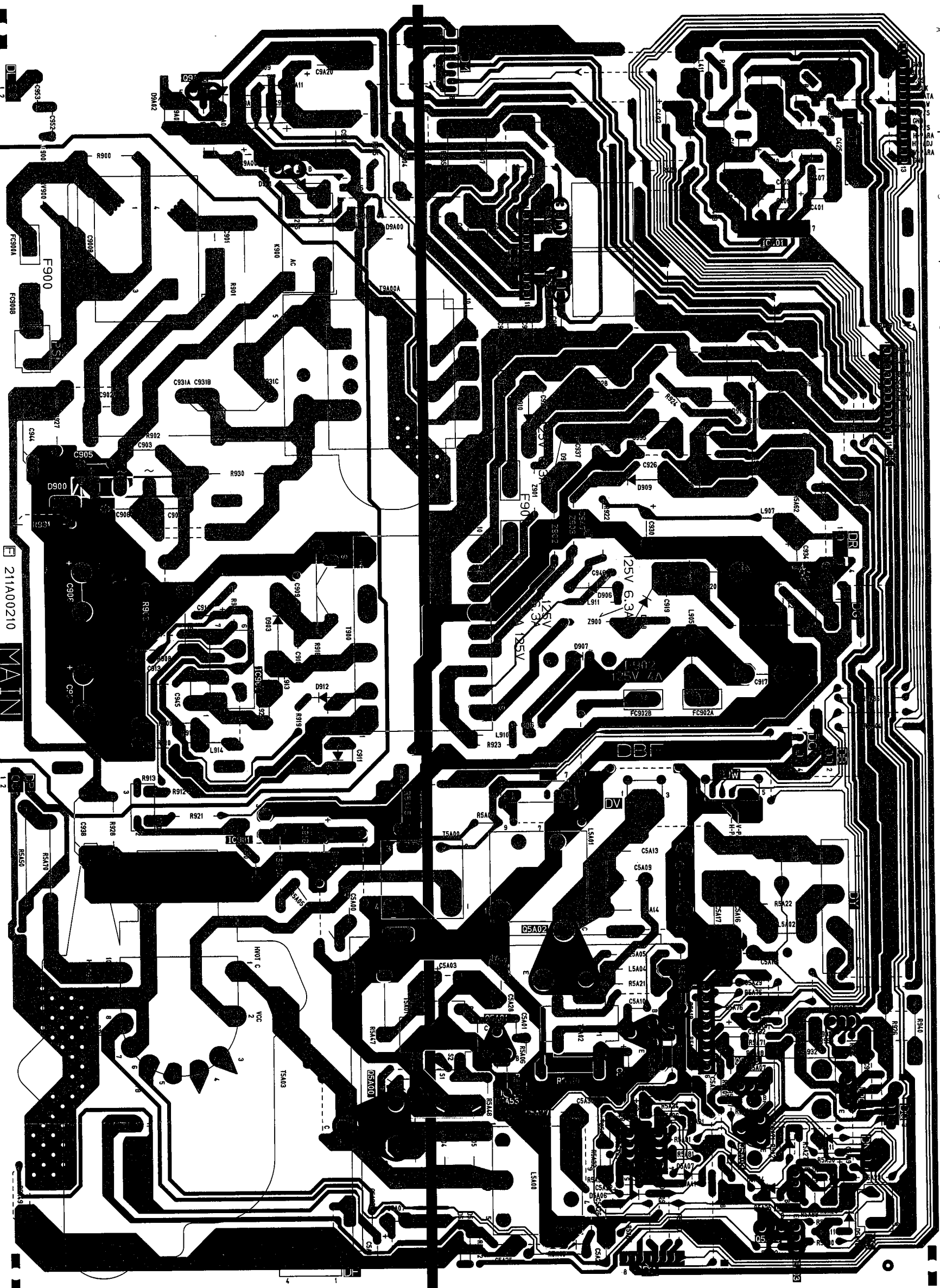










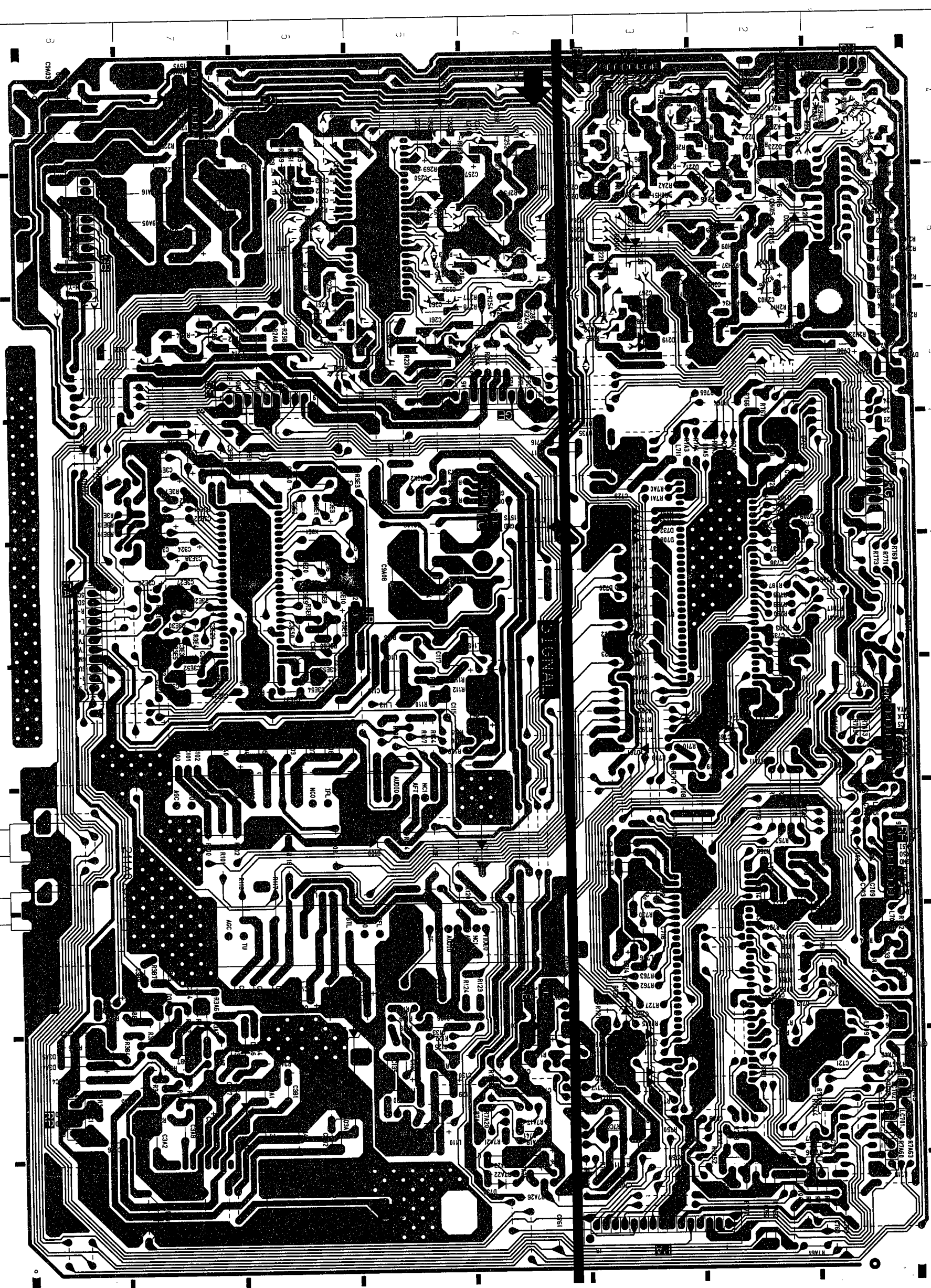


S11V005E1

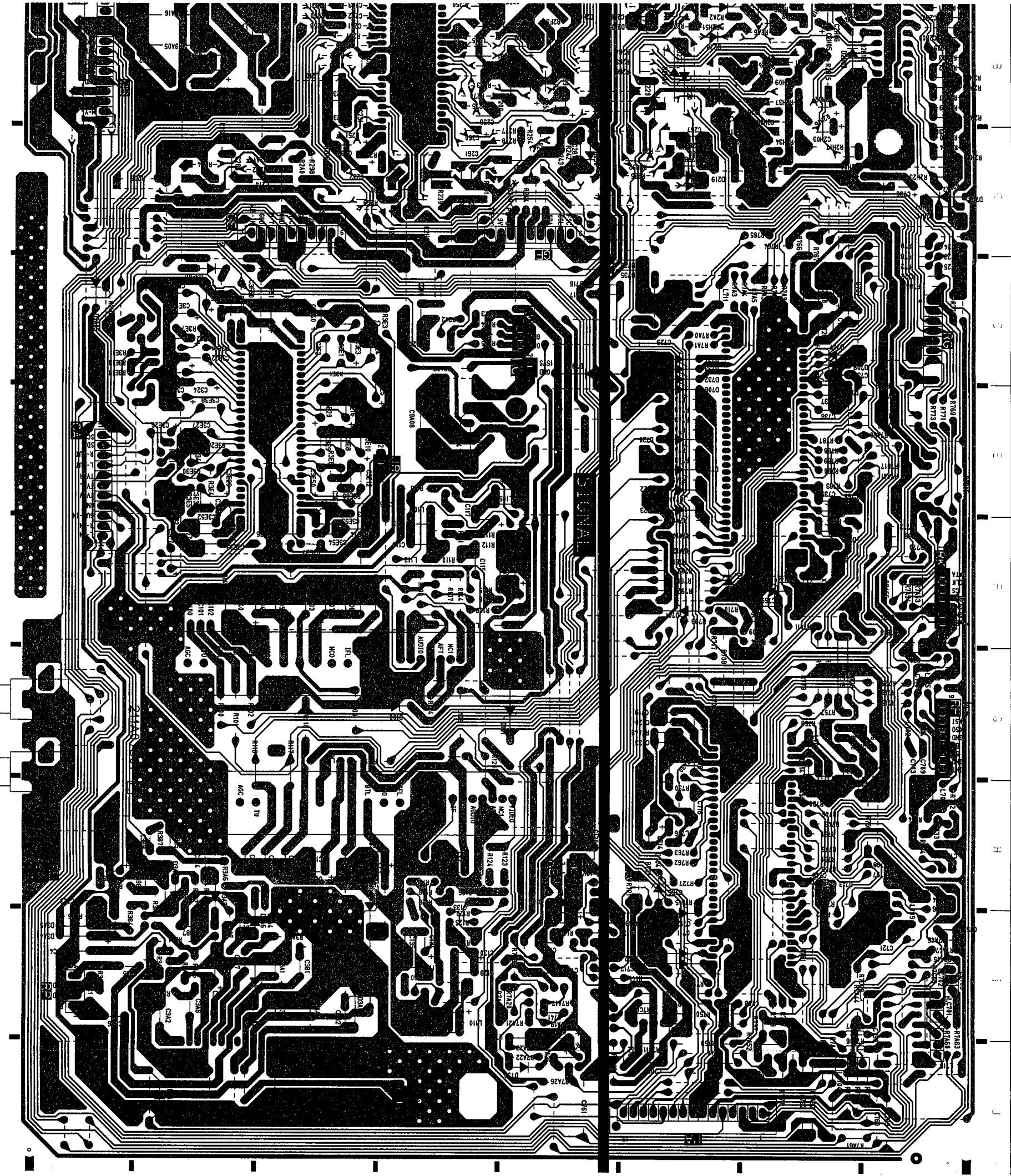
211A00210 MAIN





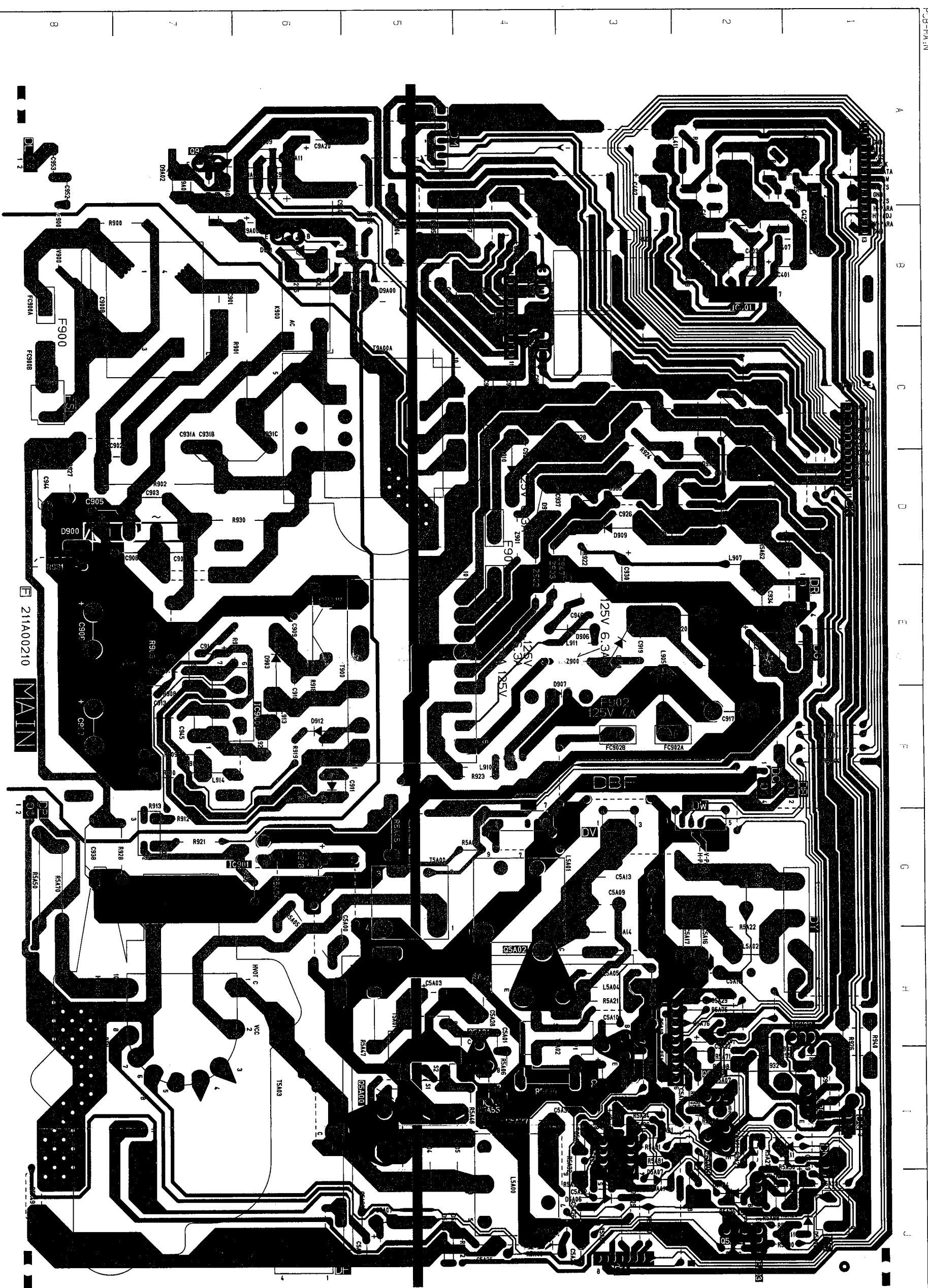


| P33-304A    |   |
|-------------|---|
| 37953-1-ADD |   |
| NO.         |   |
| 07200       | B |
| 0100        | C |
| 0101        | G |
| 0102        | F |
| 0104        | A |
| 0210        | A |
| 0211        | A |
| 0215        | A |
| 0217        | B |
| 0219        | C |
| 0219        | C |
| 0220        | B |
| 0229        | B |
| 0233        | C |
| 0230        | B |
| 0232        | B |
| 03A1        | I |
| 03A2        | I |
| 03A3        | H |
| 03A4        | I |
| 03A5        | I |
| 03A6        | I |
| 03A7        | F |
| 03A8        | C |
| 03E00       | C |
| 0701        | I |
| 0702        | I |
| 0703        | I |
| 0704        | I |
| 0705        | I |
| 0707        | I |
| 0709        | C |
| 0710        | C |
| 0713        | C |
| 0714        | C |
| 0716        | I |
| 0717        | I |
| 0718        | I |
| 0719        | I |
| 0720        | I |
| 0721        | I |
| 0722        | I |
| 0723        | I |
| 0724        | I |
| 0725        | I |
| 0726        | I |
| 0727        | I |
| 0728        | I |
| 0730        | I |
| 0731        | I |
| 0733        | I |
| 0735        | I |
| 0736        | I |



| PCB SIGNAL     |         |                |         |
|----------------|---------|----------------|---------|
| SYMBOL ADDRESS |         | SYMBOL ADDRESS |         |
| NO.            | ADDRESS | NO.            | ADDRESS |
| CF200          | B-4     | D735           | D-3     |
| D100           | G-5     | D736           | D-3     |
| D101           | G-4     | D9A04          | A-7     |
| D102           | H-4     | D9A05          | D-8     |
| D104           | H-6     | D9A06          | E-5     |
| D210           | A-5     | IC200          | B-5     |
| D211           | A-4     | IC203          | B-6     |
| D216           | A-3     | IC204          | B-1     |
| D217           | B-3     | IC3A1          | I-7     |
| D218           | C-3     | IC3E1          | E-6     |
| D219           | C-3     | IC700          | H-2     |
| D220           | B-3     | IC701          | D-3     |
| D223           | A-2     | IC702          | G-2     |
| D224           | A-2     | IC703          | E-2     |
| D225           | A-2     | IC705          | I-1     |
| D227           | A-1     | IC706          | H-1     |
| D228           | B-3     | IC9A00         | B-7     |
| D229           | B-3     | IC9A01         | A-7     |
| D230           | C-4     | IC9A12         | E-4     |
| D2H00          | B-2     |                |         |
| D2H02          | B-4     | L100           | F-6     |
| D3A1           | I-6     | L101           | F-6     |
| D3A2           | I-6     | L102           | F-5     |
| D3A3           | H-7     | L103           | F-4     |
| D3A4           | I-8     | L104           | E-5     |
| D3A5           | I-8     | L105           | E-4     |
| D3A6           | I-6     | L106           | G-6     |
| D3A7           | H-7     | L107           | H-5     |
| D3A8           | J-7     | L108           | G-5     |
| D3E00          | D-7     | L109           | I-5     |
| D701           | F-3     | L110           | I-5     |
| D702           | I-3     | L111           | I-5     |
| D703           | I-3     | L112           | H-4     |
| D704           | H-3     | L113           | F-5     |
| D706           | E-3     | L210           | B-5     |
| D707           | D-2     | L211           | A-4     |
| D709           | D-2     | L212           | C-7     |
| D710           | D-2     | L214           | C-6     |
| D713           | H-2     | L215           | B-5     |
| D714           | G-2     | L701           | H-1     |
| D715           | G-2     | L702           | G-1     |
| D716           | D-4     | L703           | G-1     |
| D717           | D-4     | L704           | G-1     |
| D718           | E-2     | L705           | G-1     |
| D719           | C-1     | L706           | H-3     |
| D720           | E-3     | L707           | G-2     |
| D721           | E-3     | L708           | G-2     |
| D722           | E-3     | L709           | H-1     |
| D723           | E-3     | L710           | D-2     |
| D724           | F-2     | L711           | D-3     |
| D725           | F-2     | L714           | I-4     |
| D726           | F-3     | L715           | J-1     |
| D727           | D-2     | L716           | G-1     |
| D728           | G-2     | LC701          | I-1     |
| D730           | J-4     | LC702          | I-1     |
| D731           | D-4     | LC703          | I-1     |
| D732           | D-3     | LC704          | J-2     |
| D733           | D-3     |                |         |
| D734           | D-3     | PJ700          | G-8     |

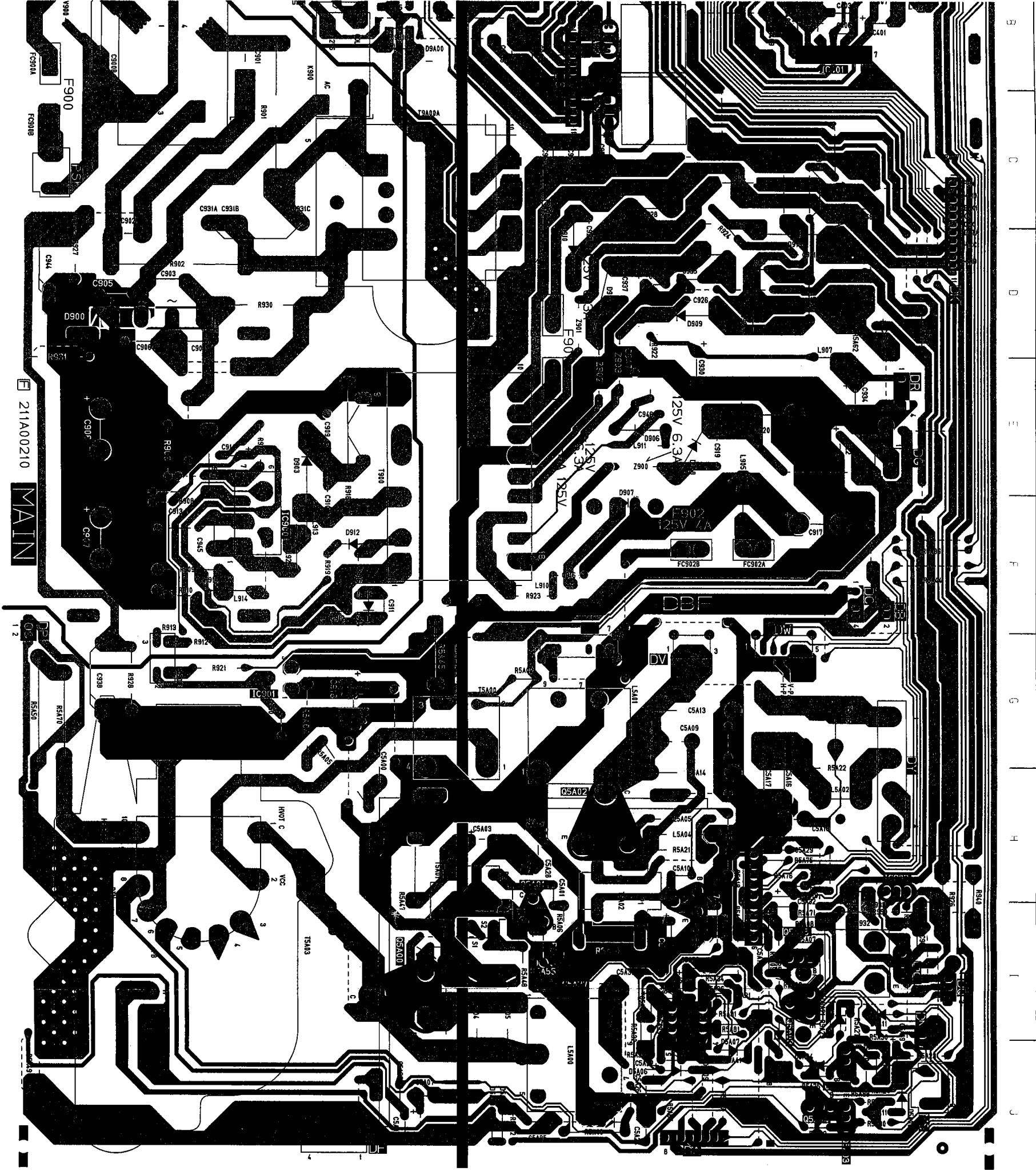
| SYMBOL ADDRESS |         | SYMBOL ADDRESS |         |
|----------------|---------|----------------|---------|
| NO.            | ADDRESS | NO.            | ADDRESS |
| PJ701          | G-8     | TP11           | F-5     |
|                |         | TP11A          | H-5     |
|                |         | TU101          | G-5     |
|                |         | TU102          | H-5     |
|                |         | X200           | C-5     |
|                |         | X3E1           | D-6     |
|                |         | X701           | G-3     |
|                |         | X702           | F-2     |



SI1V00SE1

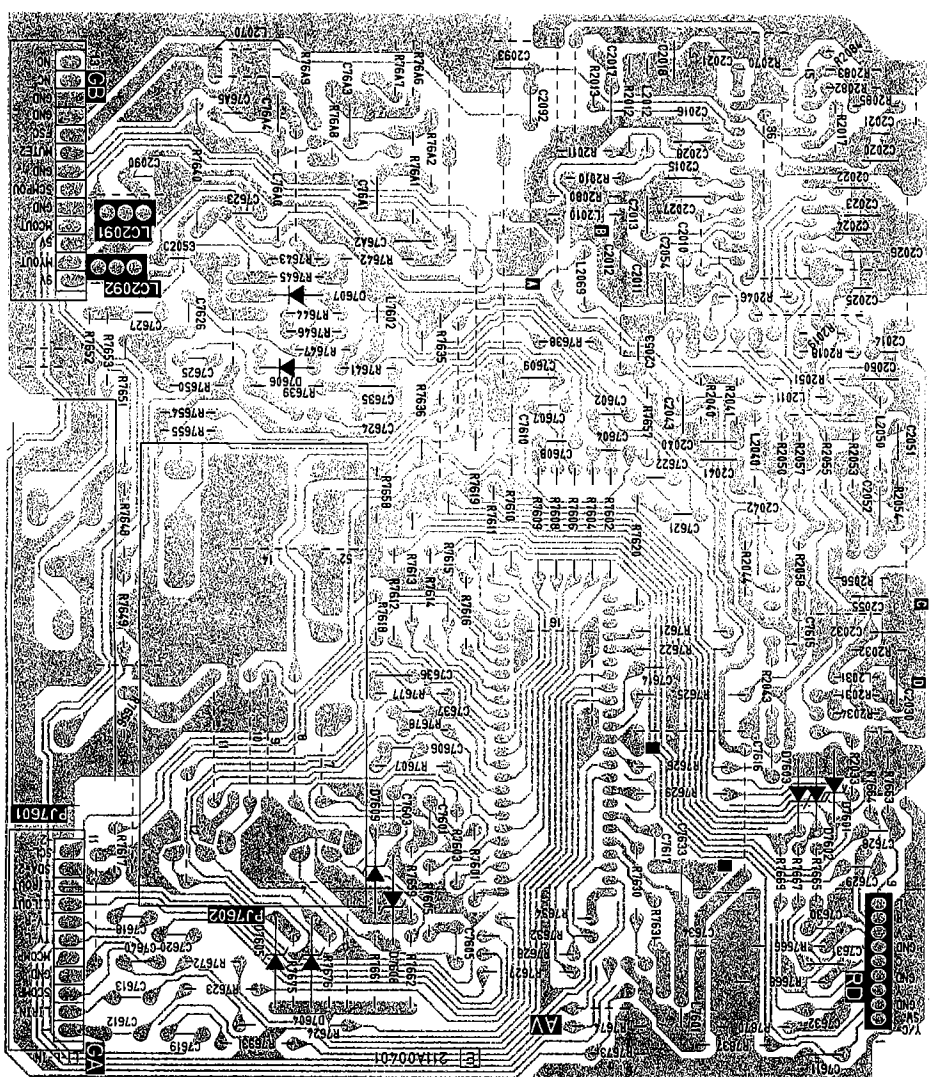
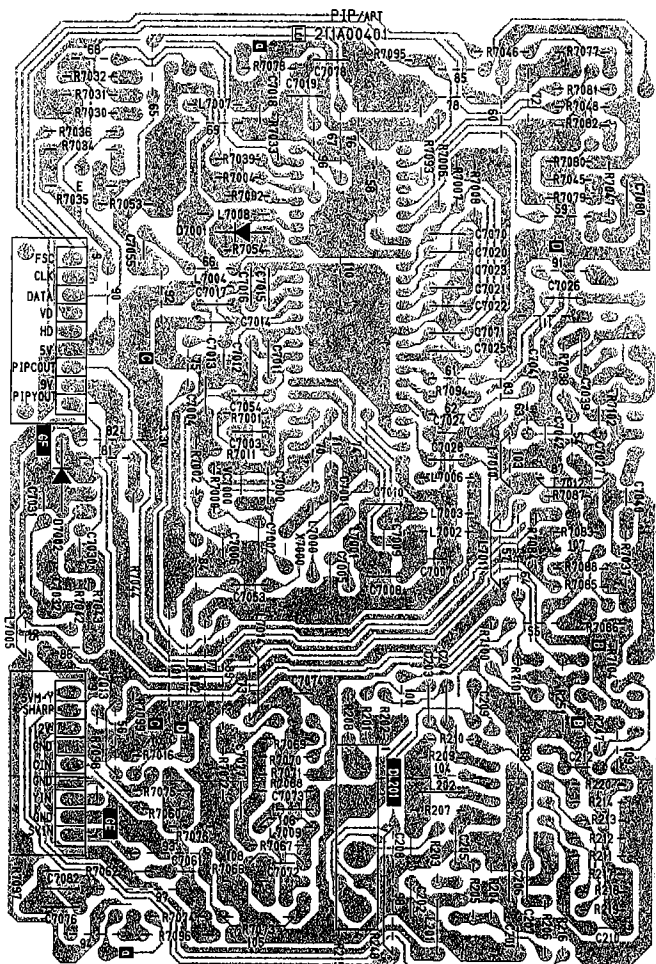
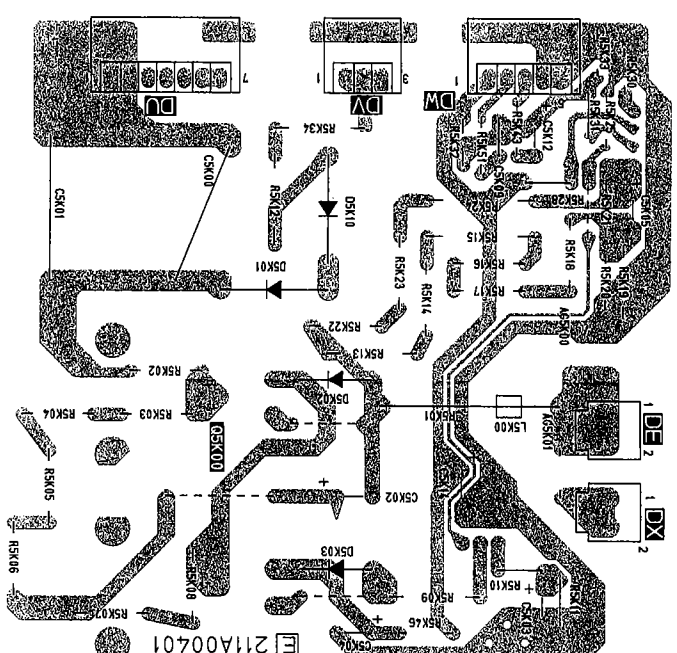
SYMBOL ADDRESS

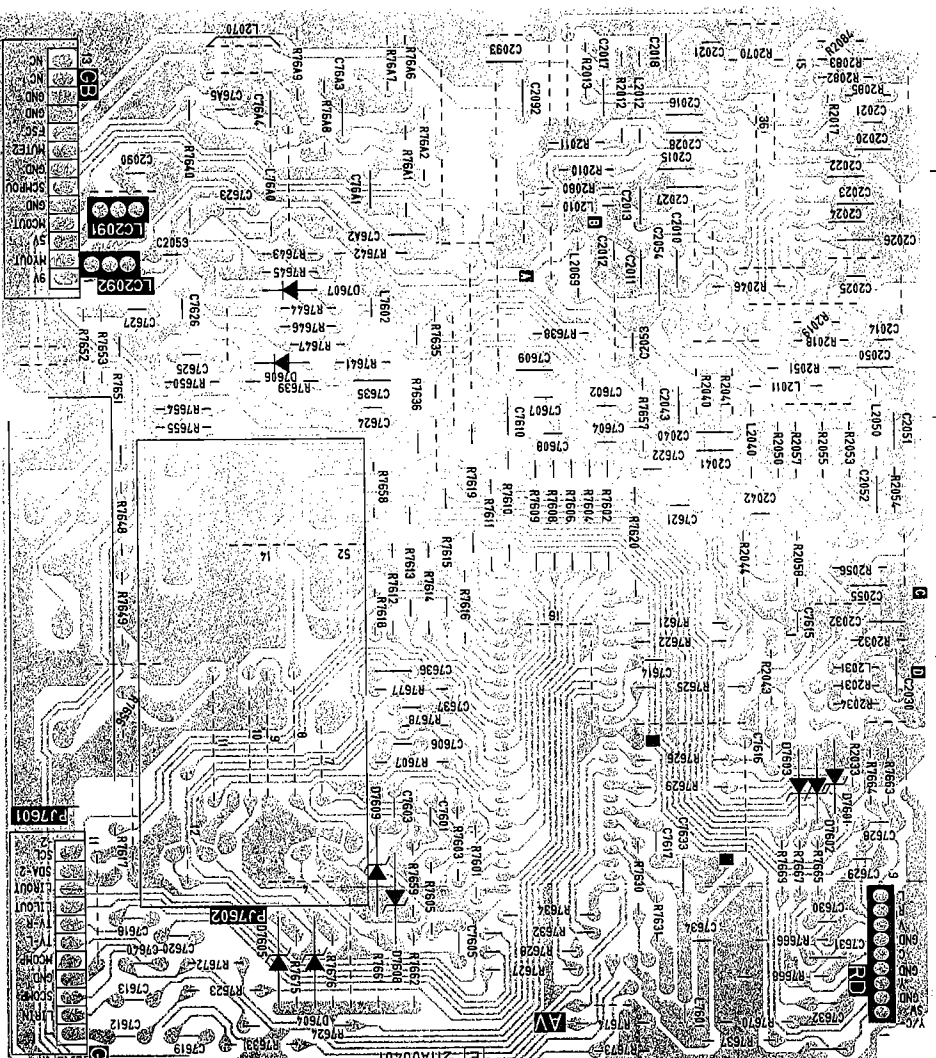
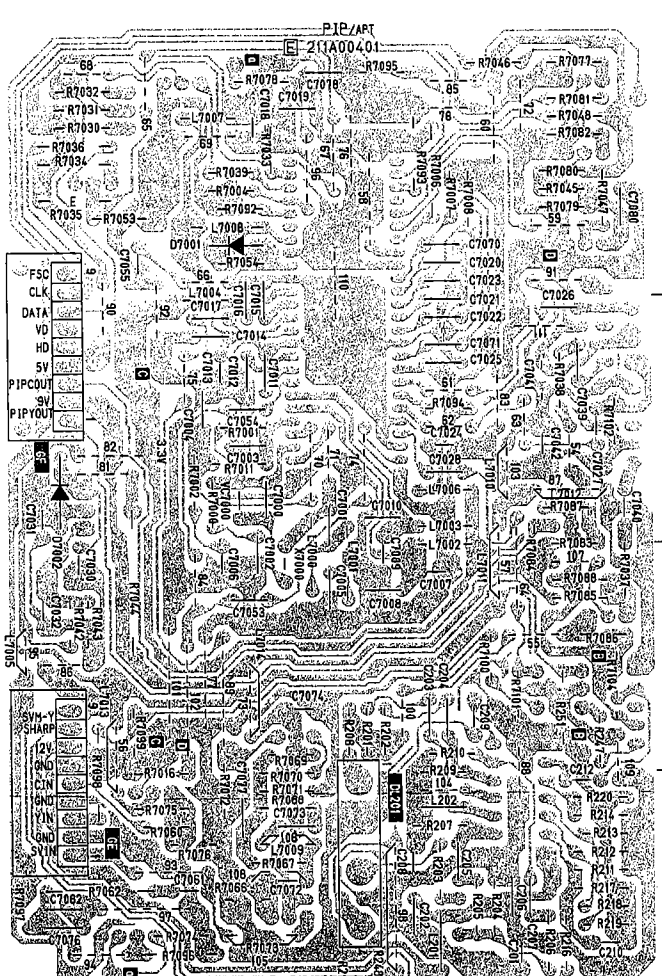
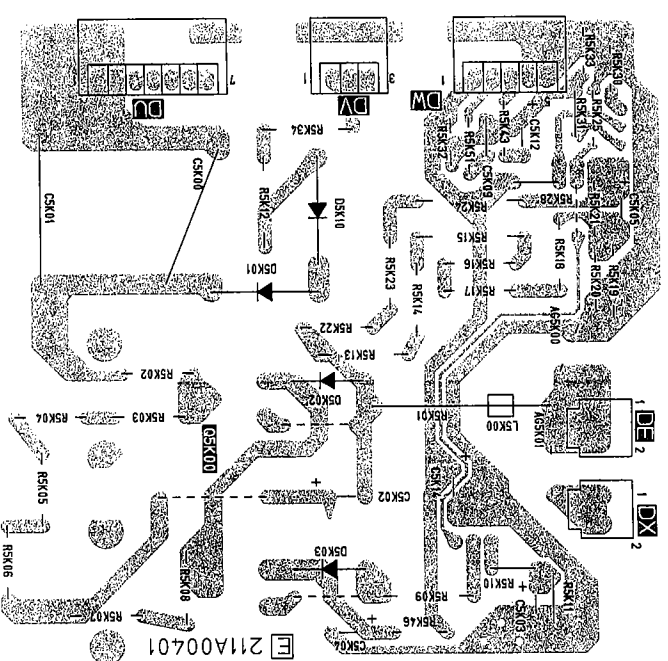
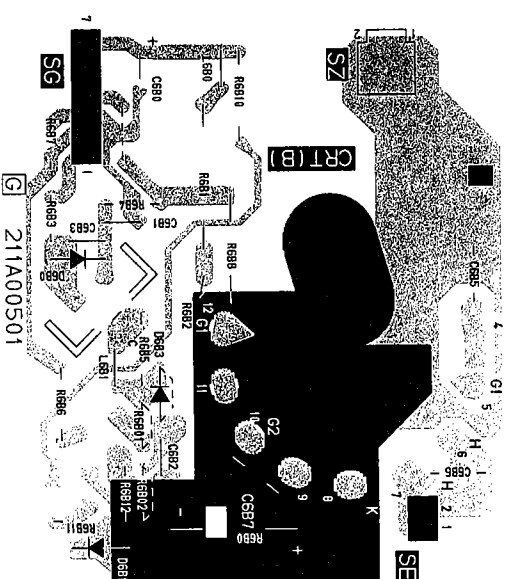
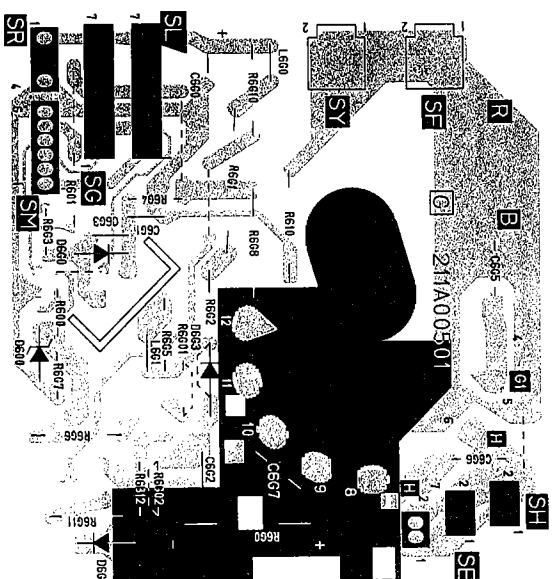
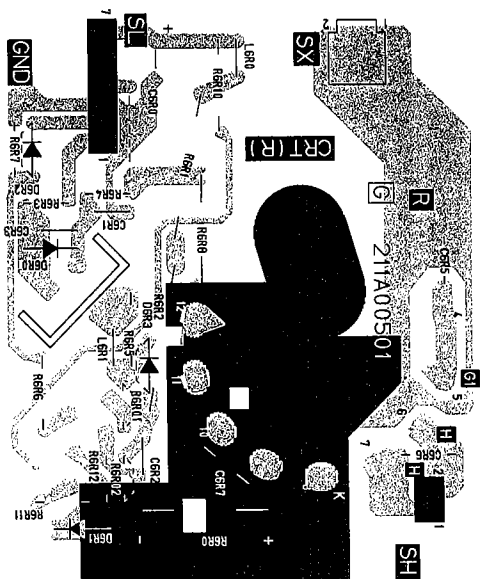
| NO.   | ADDRESS |
|-------|---------|
| AG900 | B-8     |
| D401  | A-3     |
| D402  | B-2     |
| D403  | B-2     |
| D5A00 | J-1     |
| D5A02 | J-4     |
| D5A03 | J-1     |
| D5A04 | J-2     |
| D5A06 | J-3     |
| D5A07 | J-3     |
| D5A08 | J-4     |
| D5A09 | J-3     |
| D5A11 | I-1     |
| D5A20 | I-3     |
| D5A21 | I-2     |
| D5A22 | I-2     |
| D5A23 | J-1     |
| D5A27 | I-2     |
| D900  | D-7     |
| D901  | B-6     |
| D903  | E-6     |
| D904  | F-6     |
| D906  | E-3     |
| D907  | F-3     |
| D908  | E-3     |
| D909  | D-3     |
| D910  | D-4     |
| D912  | F-6     |
| D913  | D-2     |
| D914  | D-4     |
| D9A00 | B-5     |
| D9A01 | A-6     |
| D9A02 | A-7     |
| D9A03 | A-7     |
| D900  | B-8     |
| D901  | D-4     |
| D902  | F-3     |
| D900A | B-8     |
| D900B | C-8     |
| D901A | D-4     |
| D901B | E-4     |
| D902A | F-3     |
| D902B | F-3     |
| D401  | B-2     |
| D5A00 | H-3     |
| D5A01 | I-3     |
| D5A02 | E-6     |
| D5A03 | H-1     |
| D5A04 | G-6     |
| D5A05 | C-4     |
| D5A06 | B-4     |
| D900  | B-6     |
| D401  | B-2     |
| D411  | A-2     |

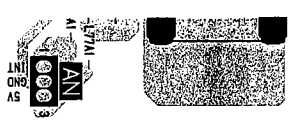
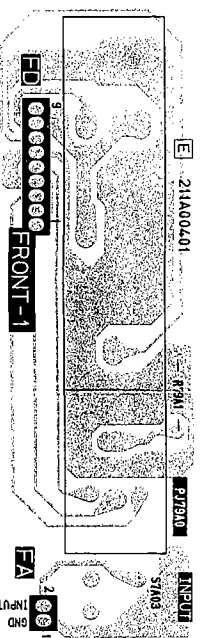
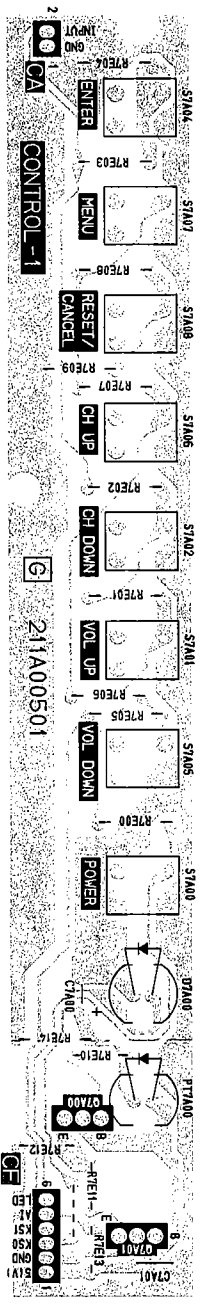
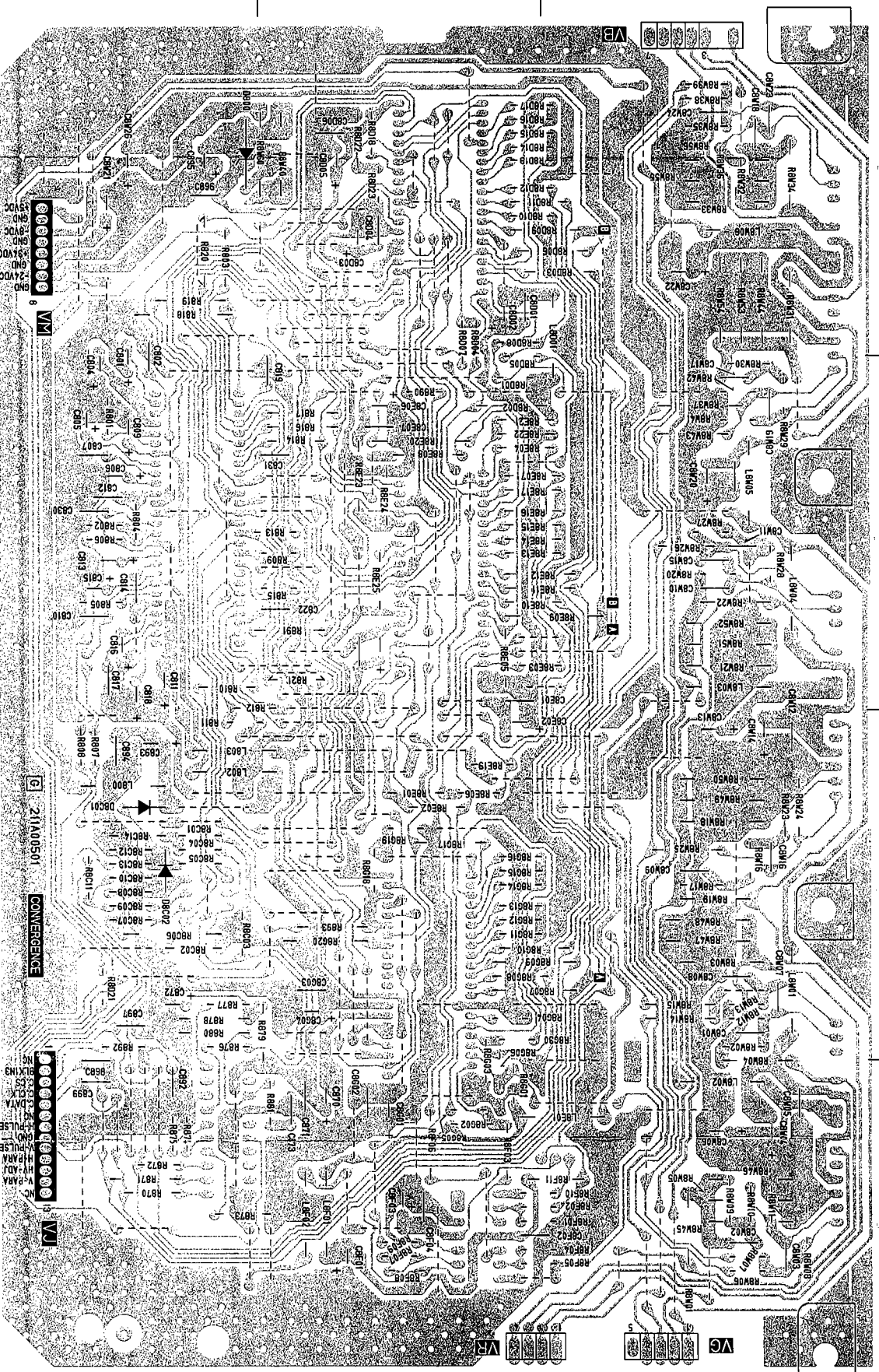


| PCB MAIN        |     |  | SYMBOL ADDRESS |     |
|-----------------|-----|--|----------------|-----|
| S/NH001 ADDRESS | NO. |  | NO.            |     |
| AG900           | B-8 |  | L411           | A-3 |
| D401            | A-3 |  | L412           | B-1 |
| D402            | B-2 |  | L5A00          | I-4 |
| D403            | B-2 |  | L5A01          | H-3 |
| D5A00           | J-1 |  | L5A01          | G-4 |
| D5A02           | J-4 |  | L5A02          | H-2 |
| D5A03           | J-1 |  | L5A03          | I-5 |
| D5A04           | J-2 |  | L5A05          | H-3 |
| D5A05           | J-3 |  | L5A06          | I-5 |
| D5A07           | J-3 |  | L900           | B-6 |
| D5A08           | J-4 |  | L902           | D-1 |
| D5A09           | J-3 |  | L903           | D-2 |
| D5A10           | J-3 |  | L904           | C-3 |
| D5A11           | I-1 |  | L905           | F-3 |
| D5A20           | I-3 |  | L907           | D-2 |
| D5A21           | I-2 |  | L908           | D-3 |
| D5A22           | I-2 |  | L909           | C-3 |
| D5A23           | J-1 |  | L910           | F-4 |
| D5A27           | I-2 |  | L911           | E-3 |
| D900            | D-7 |  | L913           | F-6 |
| D901            | B-6 |  | L914           | F-7 |
| D903            | E-6 |  | L925           | F-6 |
| D904            | F-6 |  |                |     |
| D906            | E-3 |  | PC900          | G-7 |
| D907            | F-3 |  |                |     |
| D908            | E-3 |  | D5A00          | I-5 |
| D909            | D-3 |  | D5A01          | I-4 |
| D910            | D-4 |  | D5A02          | H-4 |
| D912            | F-6 |  | D5A03          | J-2 |
| D913            | D-2 |  | D5A04          | J-2 |
| D914            | D-4 |  | D5A05          | I-2 |
| D9A00           | B-5 |  | D5A06          | J-2 |
| D9A01           | A-6 |  | D5A08          | I-2 |
| D9A02           | A-7 |  | D900           | B-6 |
| D9A03           | A-7 |  | D904           | I-1 |
|                 |     |  | D9A00          | A-7 |
| F900            | B-8 |  |                |     |
| F901            | D-4 |  | T5A00          | G-5 |
| F902            | F-3 |  | T5A01          | H-5 |
|                 |     |  | T5A02          | H-3 |
| FC900A          | B-8 |  | T5A02          | H-4 |
| FC900B          | C-8 |  | T5A03          | H-7 |
| FC901A          | D-4 |  | T900           | E-5 |
| FC901B          | E-4 |  | T900A          | C-5 |
| FC902A          | F-3 |  |                |     |
| FC902B          | F-3 |  | Z900           | E-3 |
|                 |     |  | Z901           | D-4 |
| IC-01           | B-2 |  | Z902           | E-4 |
| IC5A00          | H-3 |  | Z903           | D-4 |
| IC5A01          | I-3 |  | Z905           | C-2 |
| IC900           | F-6 |  |                |     |
| IC901           | H-1 |  |                |     |
| IC902           | G-6 |  |                |     |
| IC903           | C-4 |  |                |     |
| IC9A02          | B-4 |  |                |     |
| K900            | B-6 |  |                |     |
| L401            | B-2 |  |                |     |
| L411            | A-2 |  |                |     |













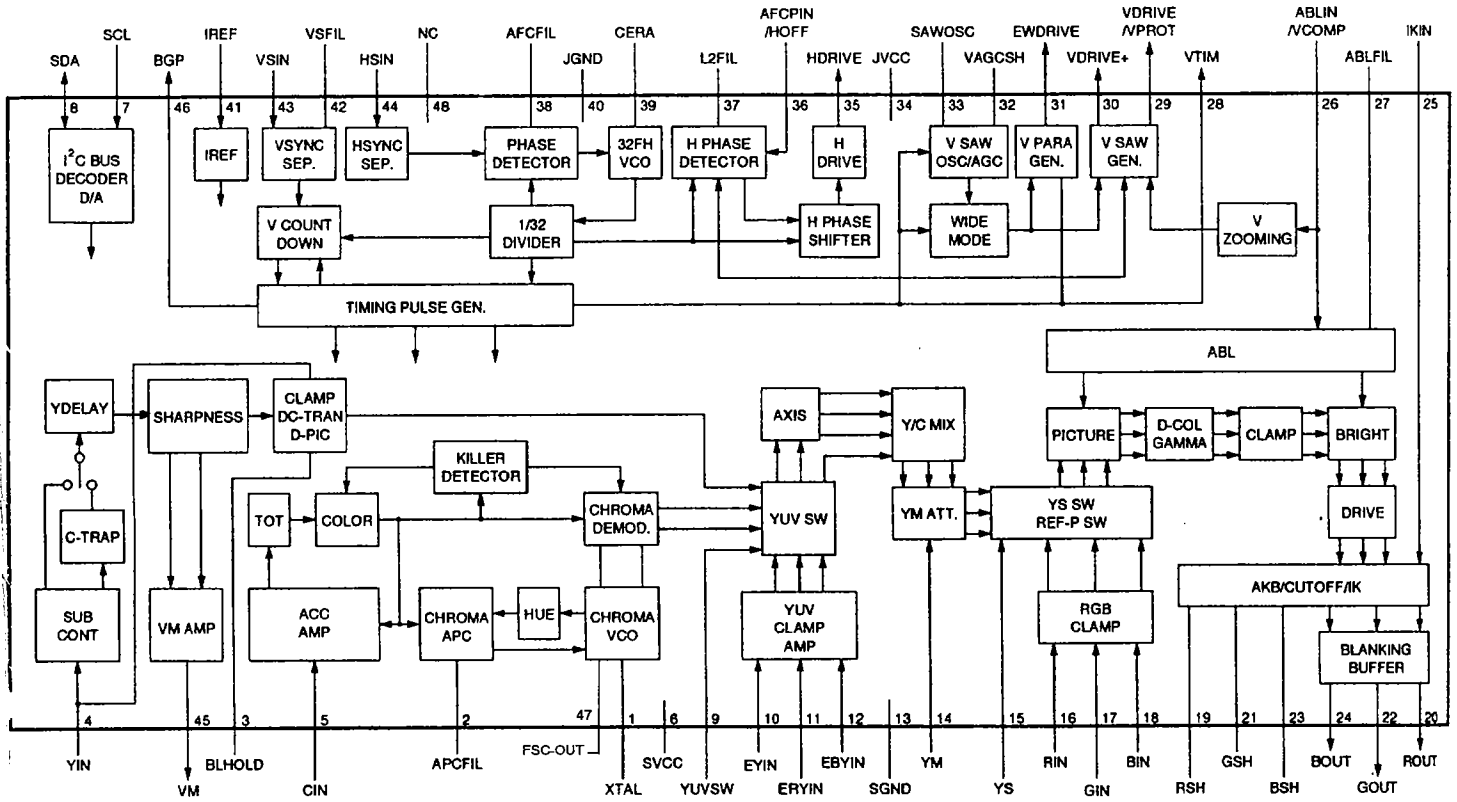




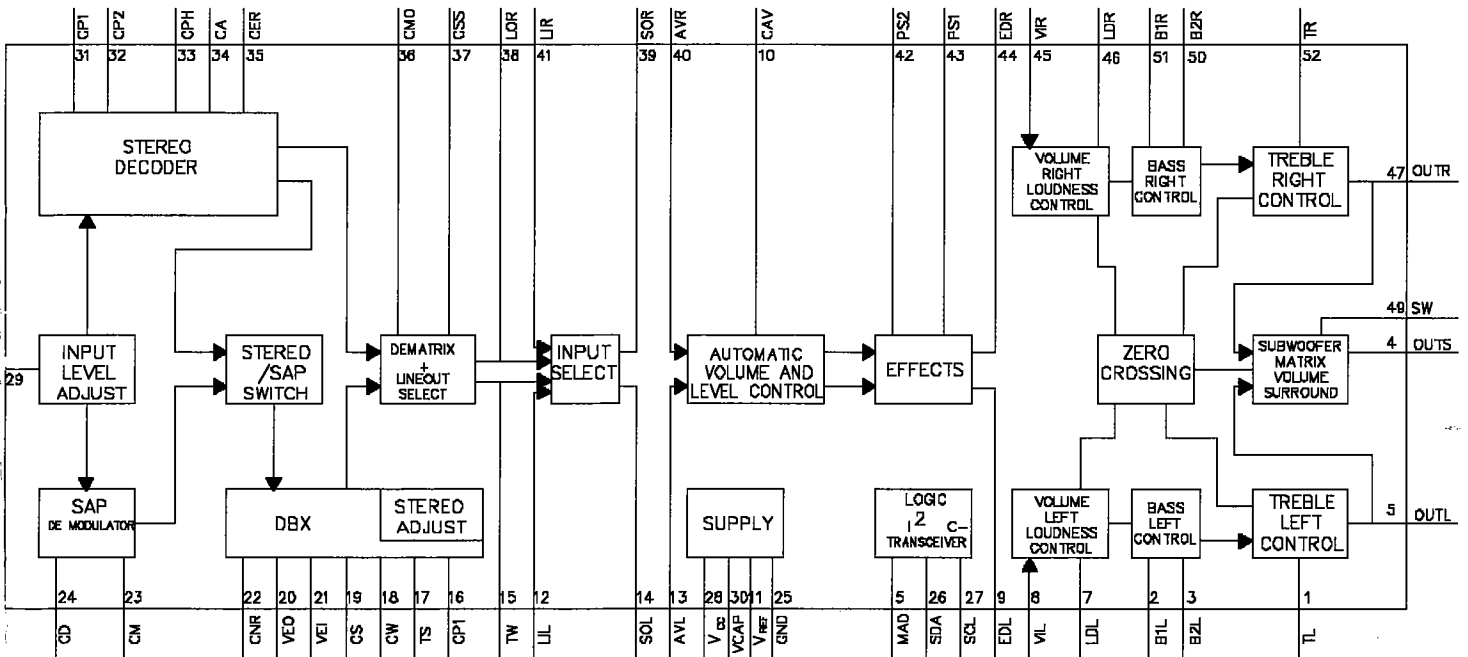


## CB-SIGNAL

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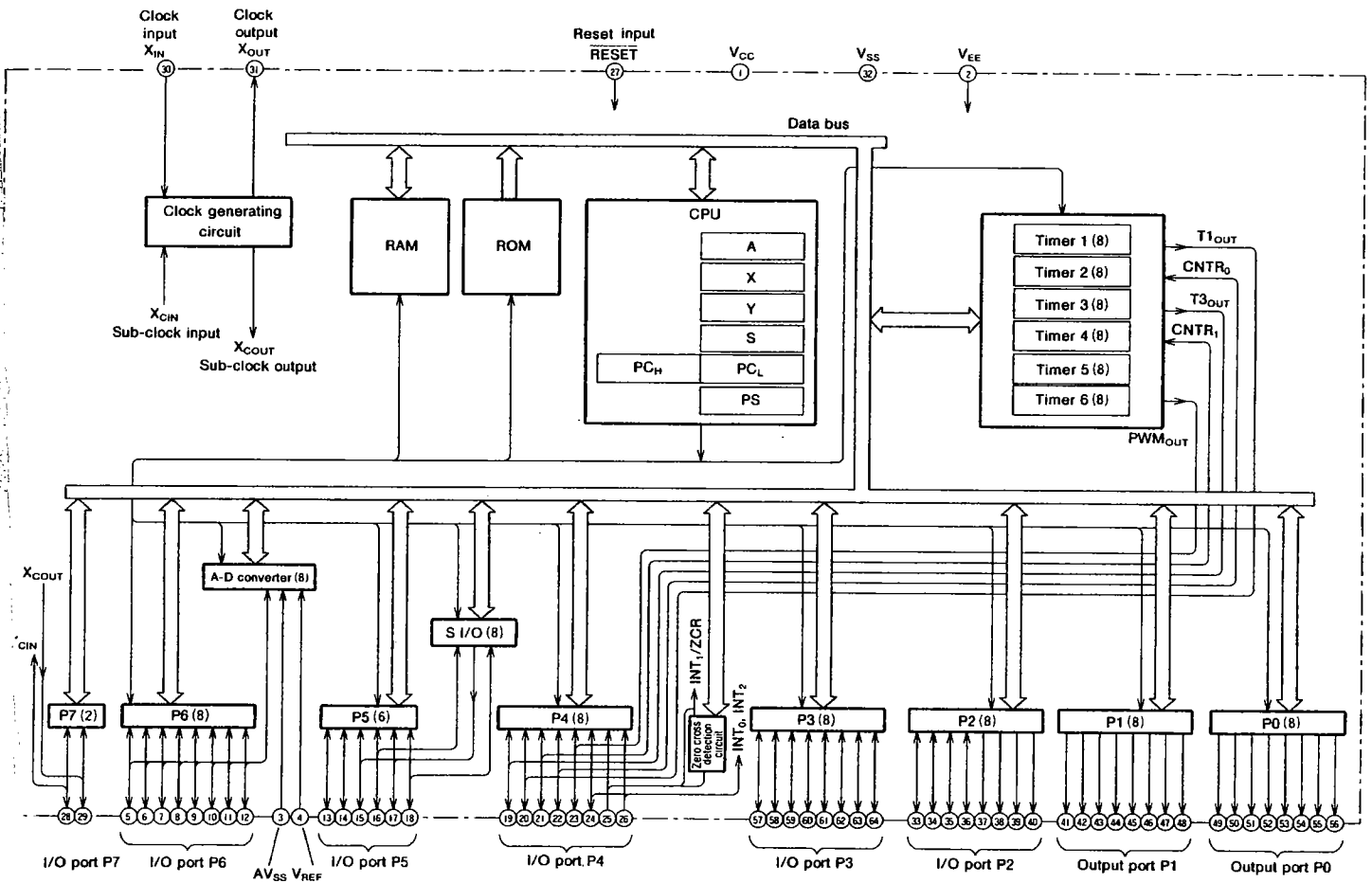


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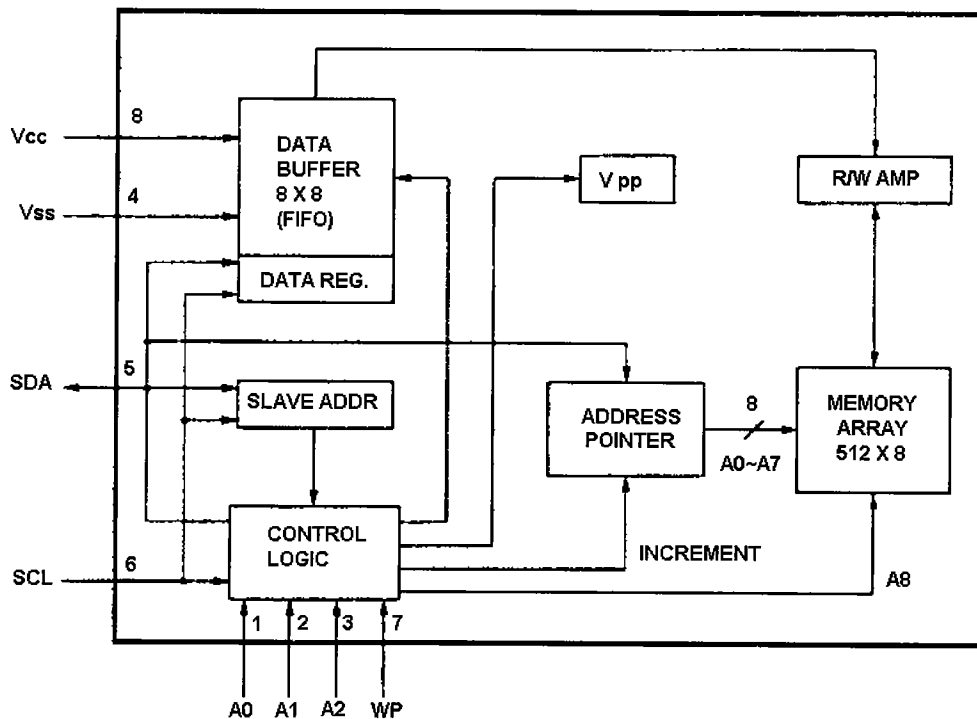




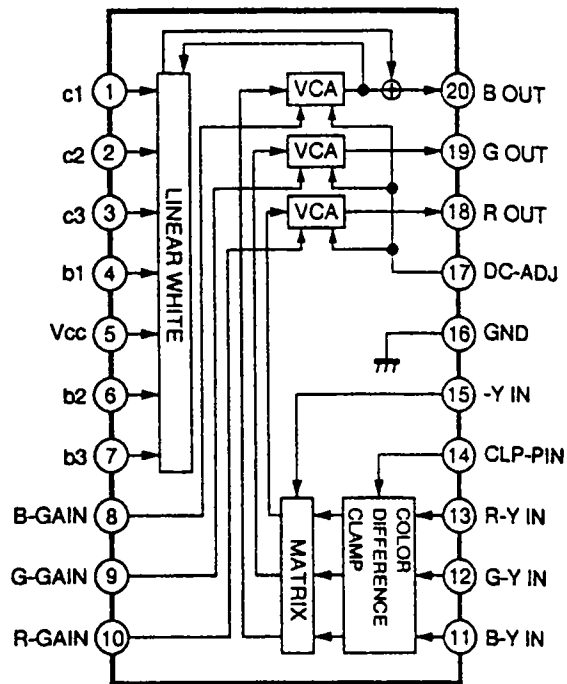
703 M38123E6SP



1 24C04A\*P

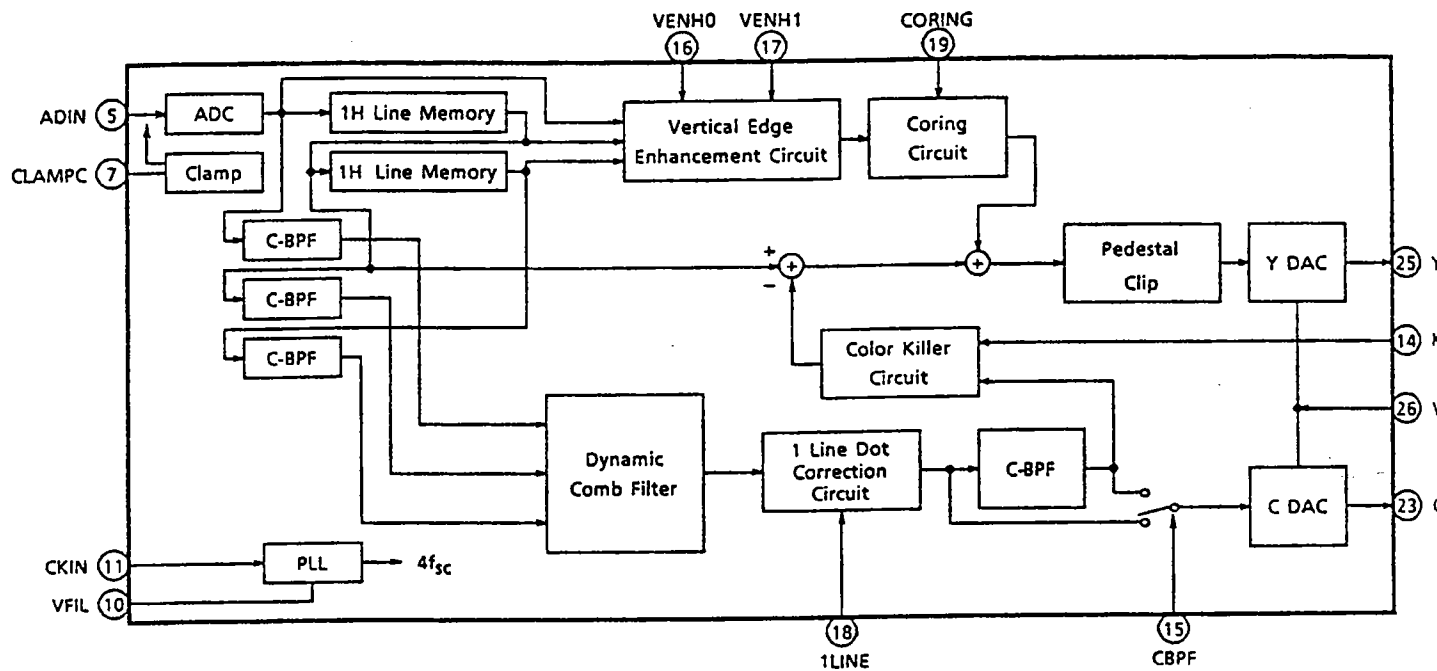


IC204 PA0057A

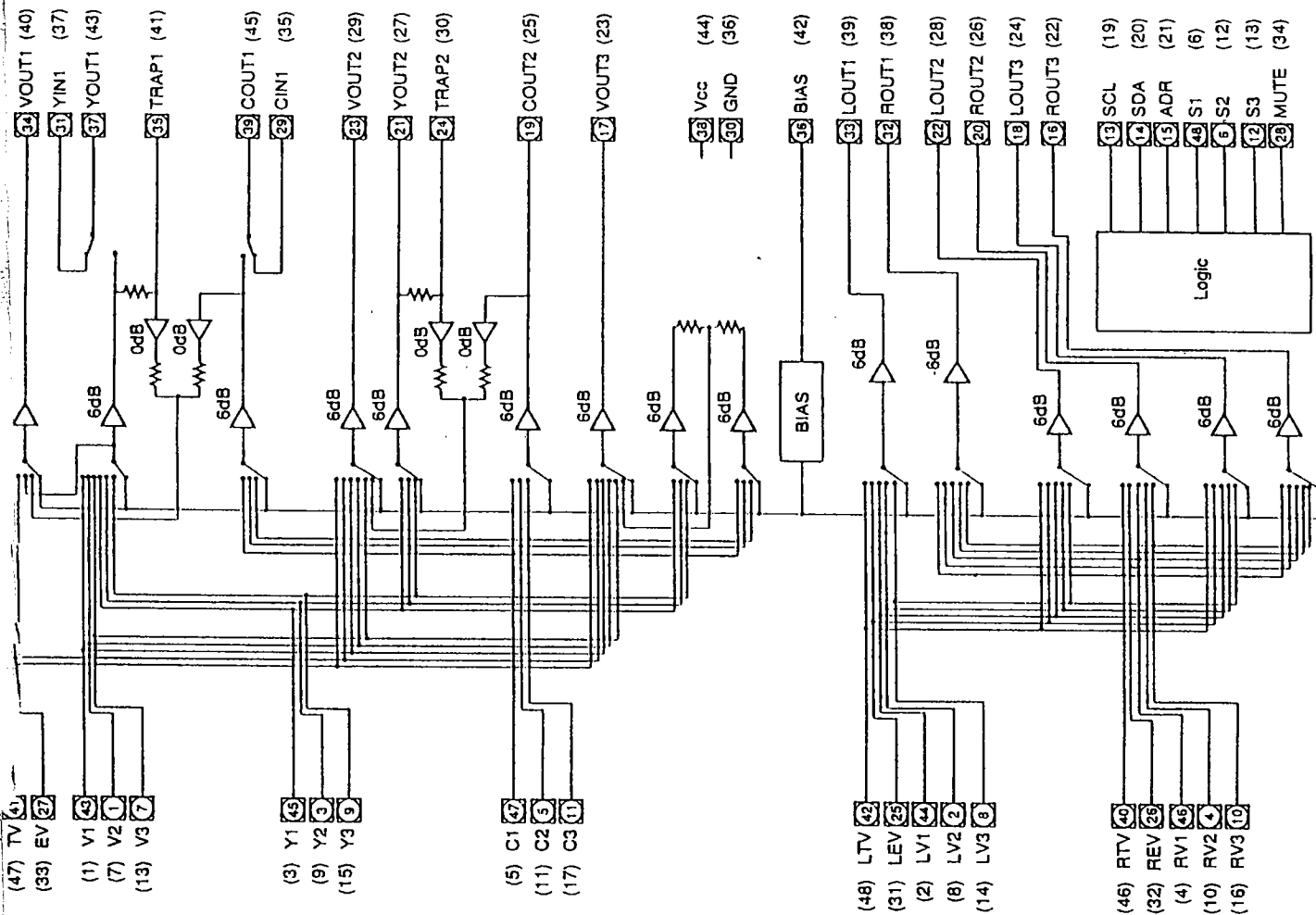


## PCB-A/V

IC2001 T90A13N



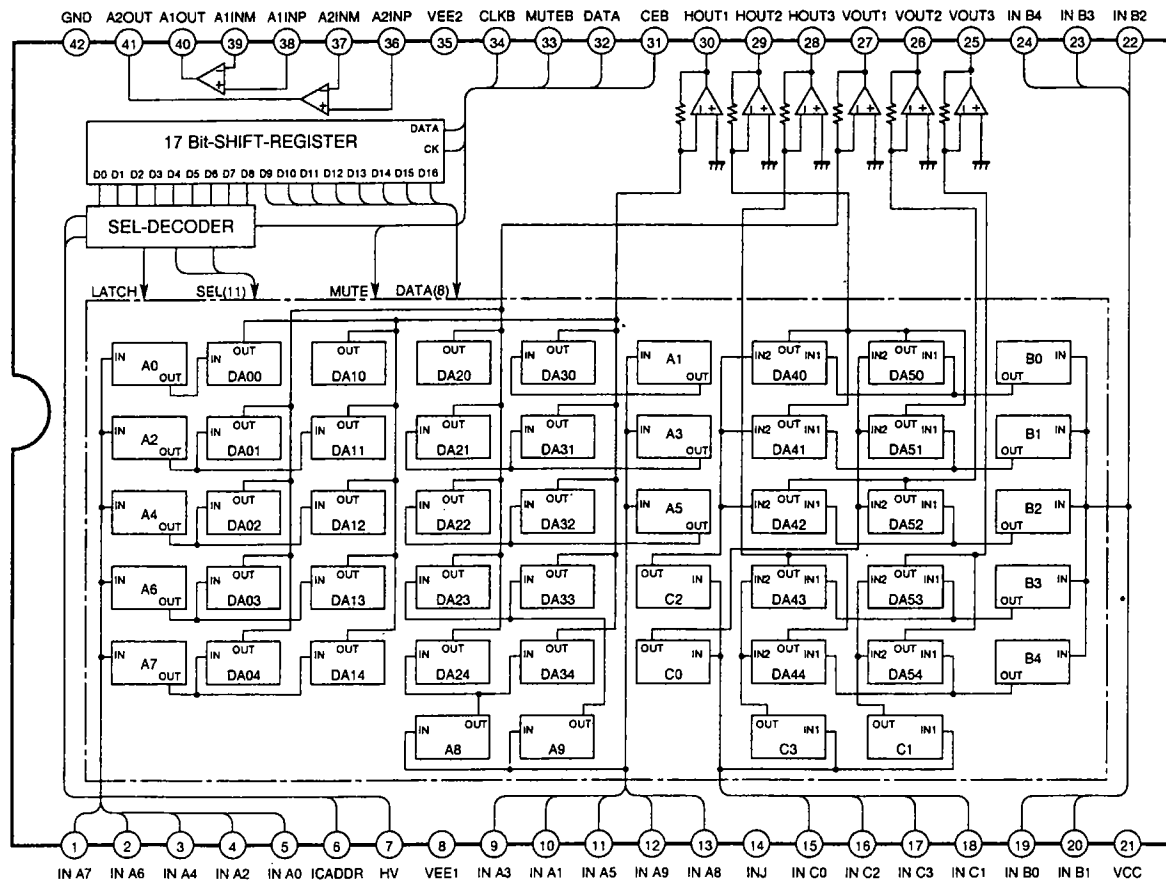
7601 CXA1855S



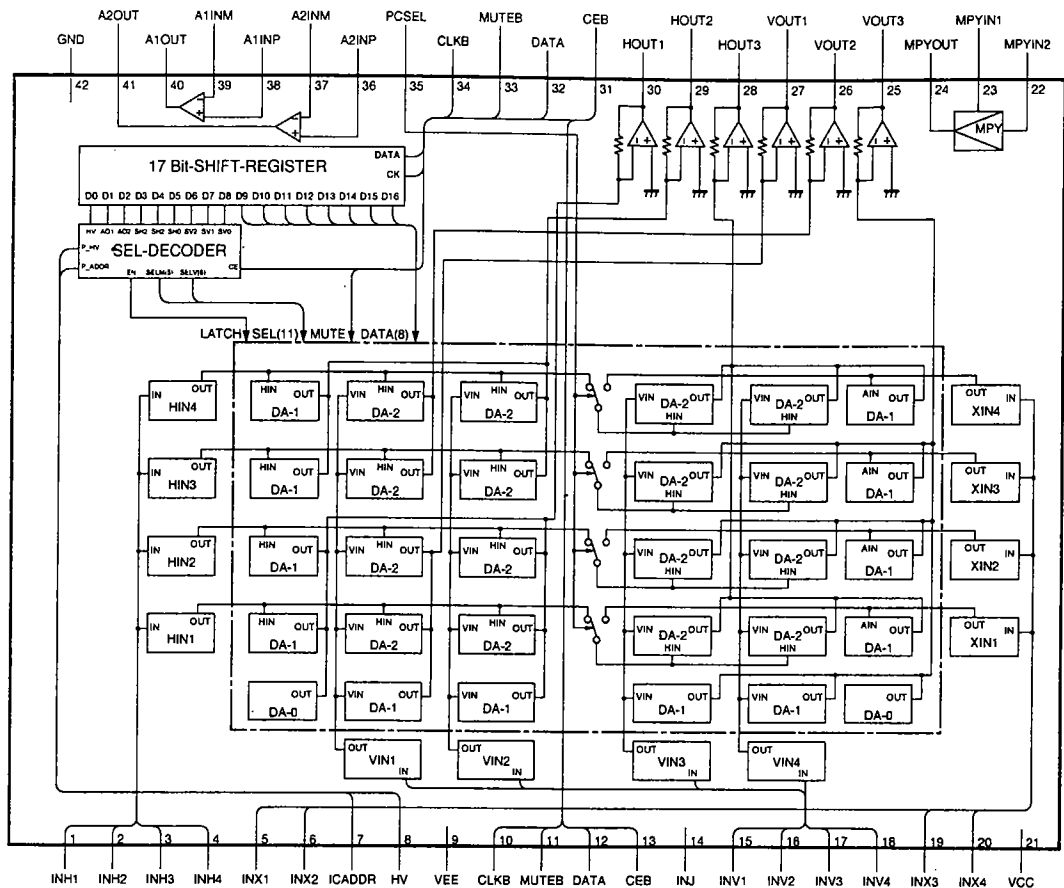




D00 CM0001AS

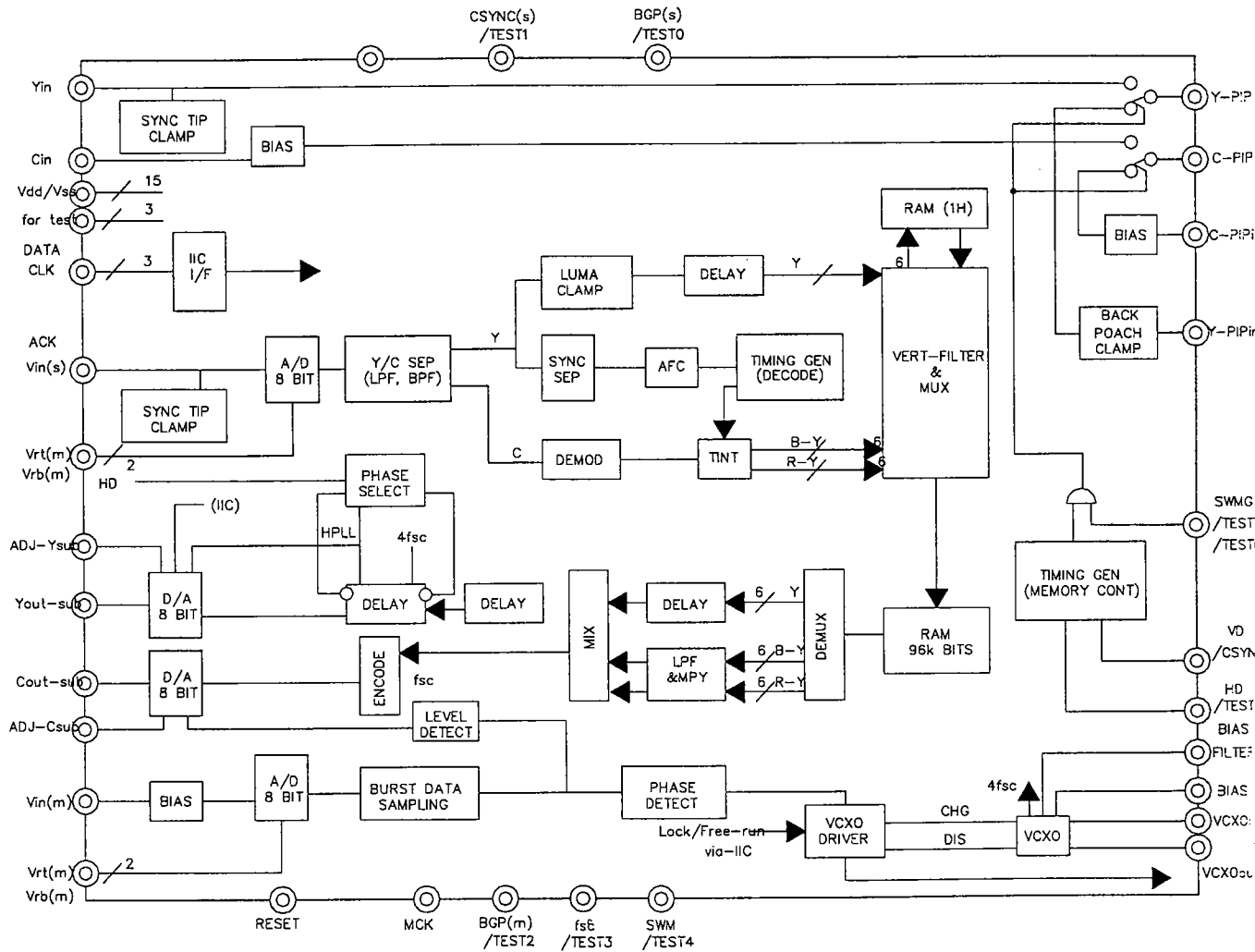


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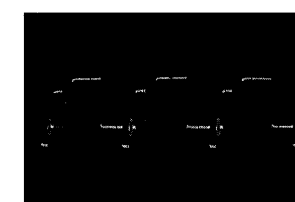
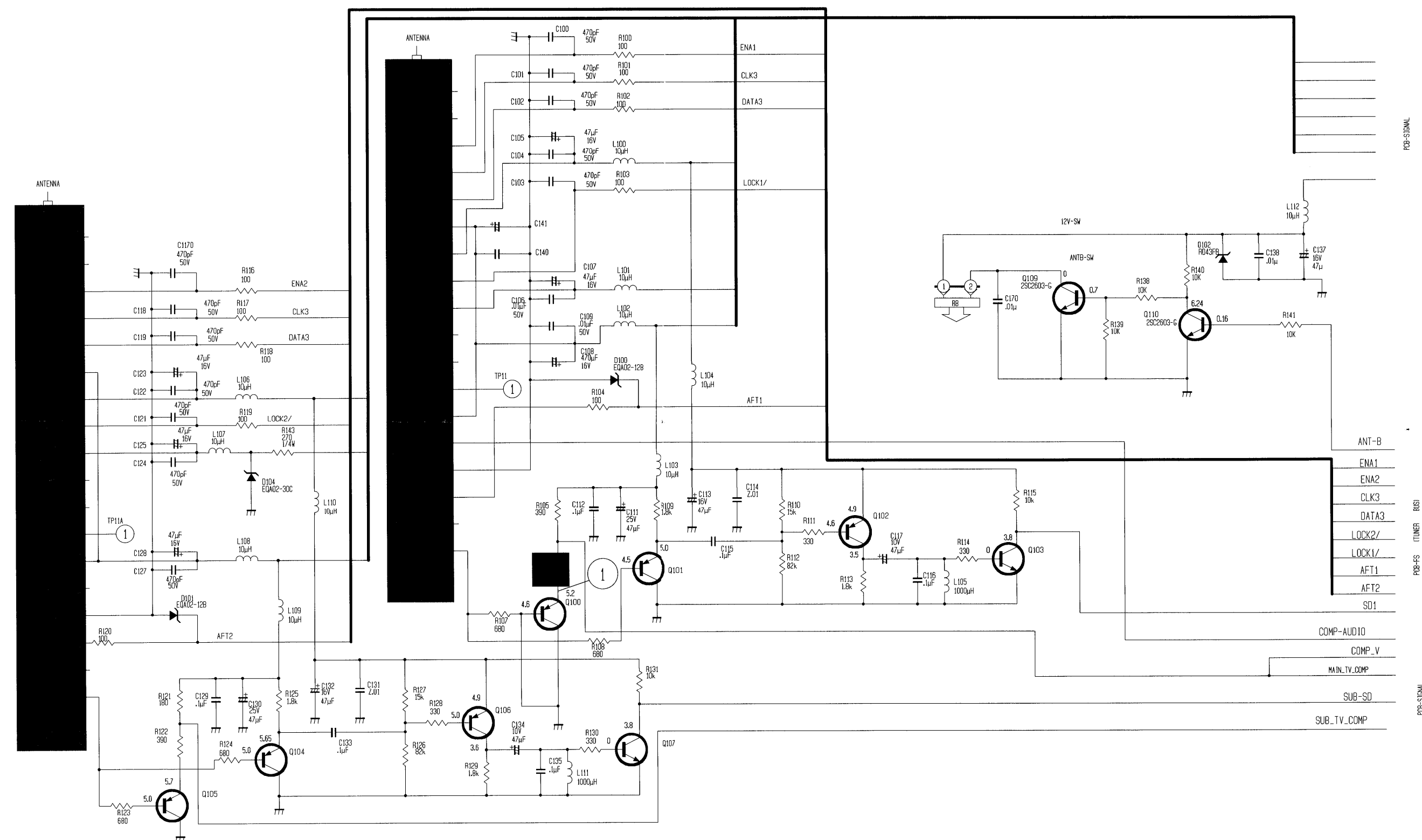


## PCB-PIP

IC7001 M65617SP-A



PCB-HF

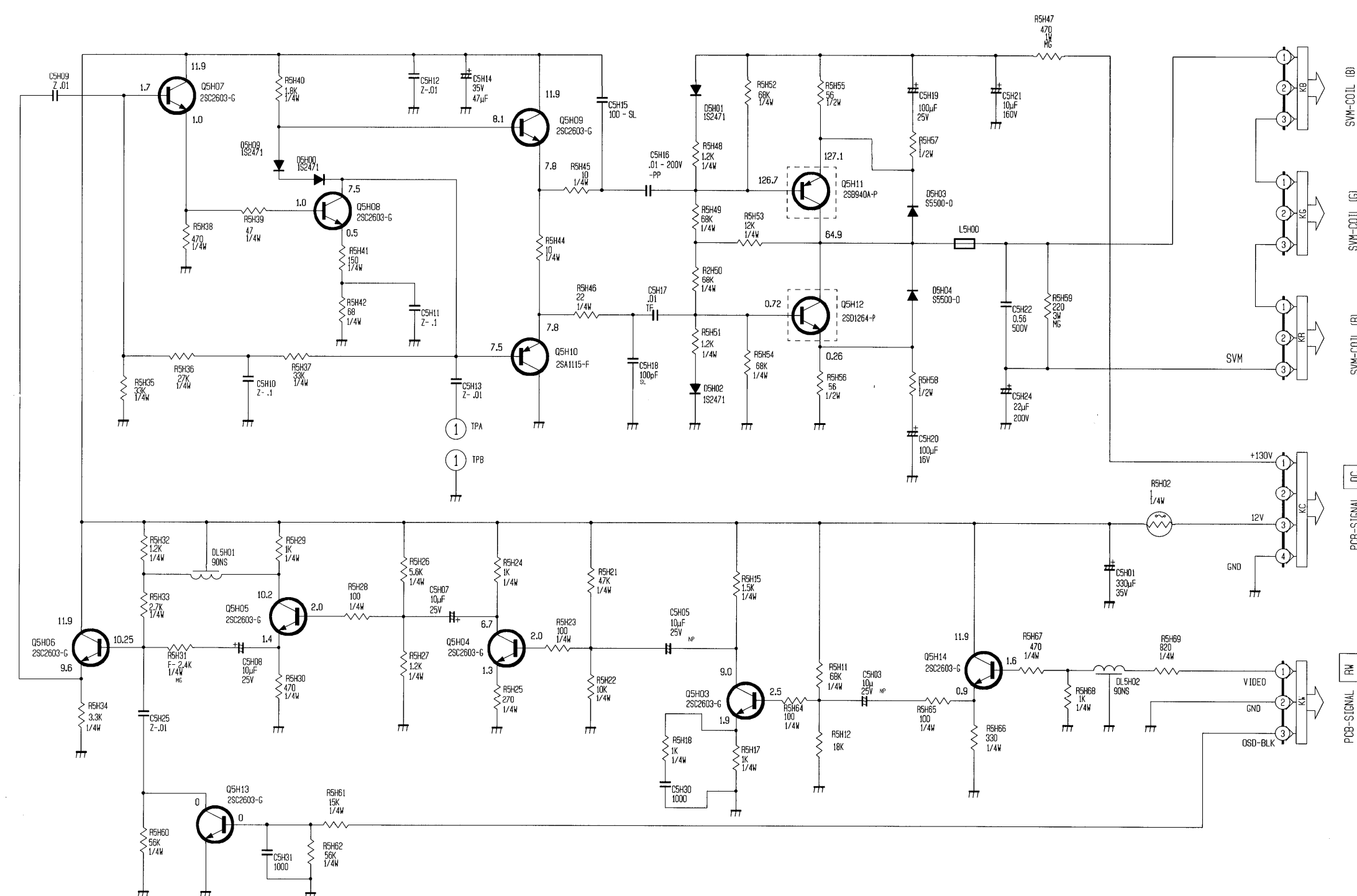


① 1.5V p-p (H)

# CONTENTS

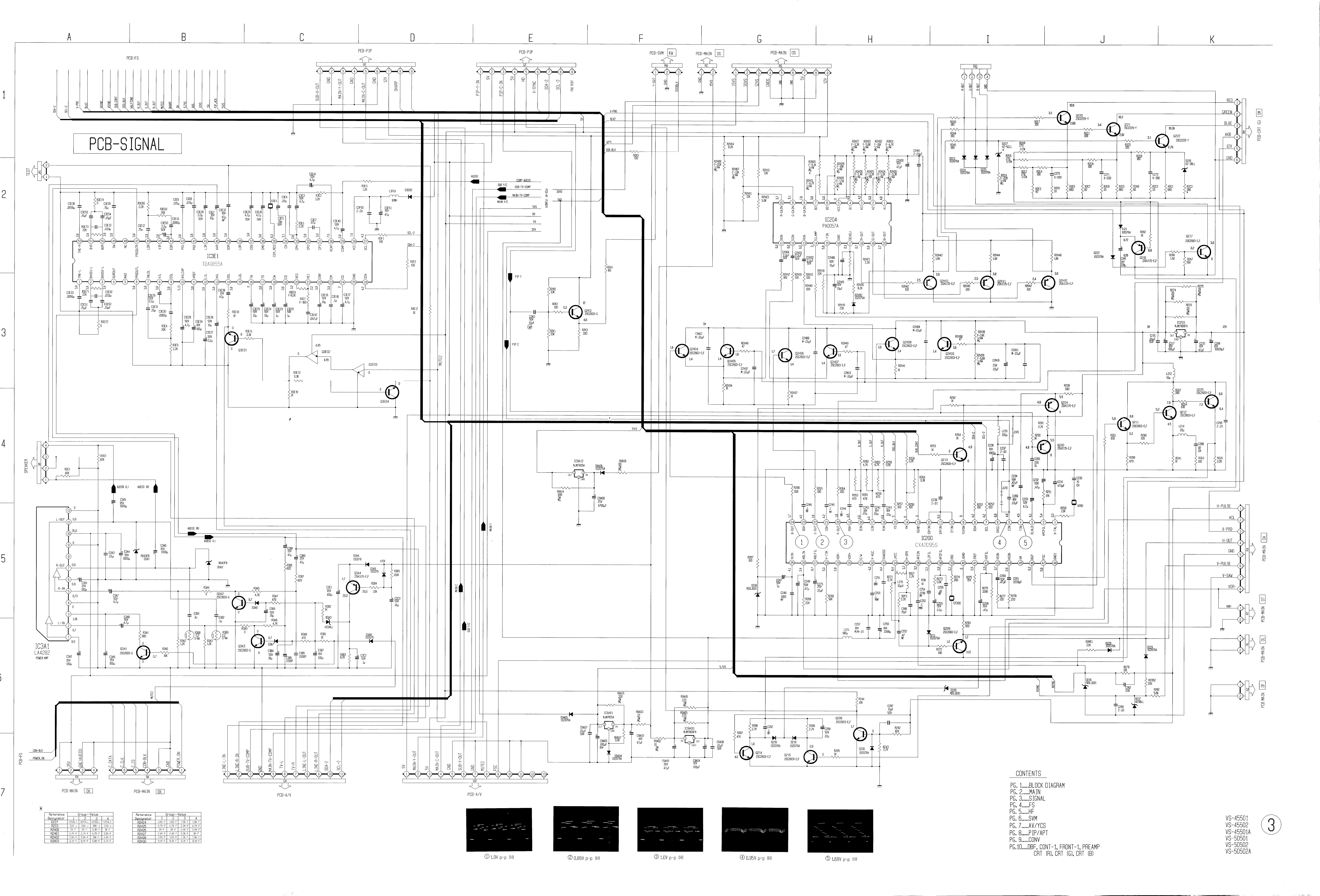
|  |         |
|--|---------|
| PG.1.....BLOCK                         | DIAGRAM |
| PG.2.....MAIN                          |         |
| PG.3.....SIGNAL                        |         |
| PG.4.....FS                            |         |
| PG.5.....HF                            |         |
| PG.6.....SVM                           |         |
| PG.7.....AV/YCS                        |         |
| PG.8.....PIP/APT                       |         |
| PG.9.....CONV                          |         |
| PG.10.....DBF, CONT-1, FRONT-1, PREAMP |         |
| CRT (R), CRT (G), CRT (B)              |         |

# PCB-SVM

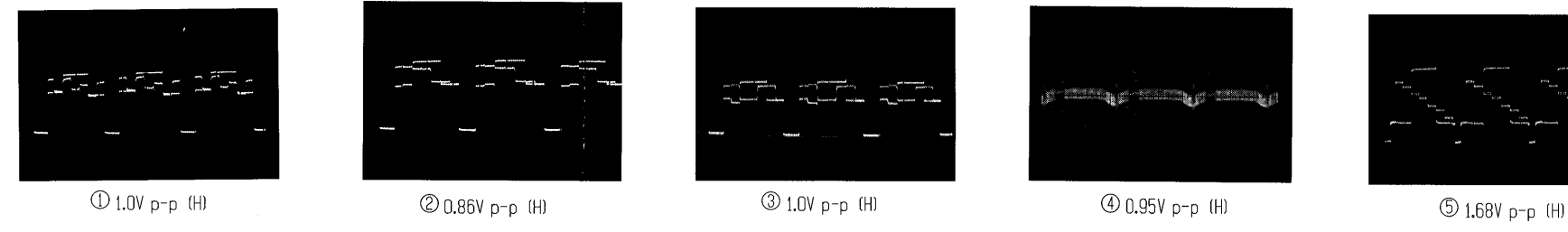


## CONTENTS

- PG. 1.....BLOCK DIAGRAM
- PG. 2.....MAIN
- PG. 3.....SIGNAL
- PG. 4.....FS
- PG. 5.....HF
- PG. 6.....SVM
- PG. 7.....AV/YCS
- PG. 8.....PIP/APT
- PG. 9.....CONV
- PG.10.....DBF, CONT-1, FRONT-1, PREAMP
- CRT (R), CRT (G), CRT (B)



| Reference | Designator | Value | Group | Value |
|-----------|------------|-------|-------|-------|
| R001      | R001       | 10K   | 1     | 10K   |
| R002      | R002       | 10K   | 1     | 10K   |
| R003      | R003       | 10K   | 1     | 10K   |
| R004      | R004       | 10K   | 1     | 10K   |
| R005      | R005       | 10K   | 1     | 10K   |
| R006      | R006       | 10K   | 1     | 10K   |
| R007      | R007       | 10K   | 1     | 10K   |
| R008      | R008       | 10K   | 1     | 10K   |
| R009      | R009       | 10K   | 1     | 10K   |
| R010      | R010       | 10K   | 1     | 10K   |



CONTENTS

PG. 1.....BLOCK DIAGRAM

PG. 2.....MAIN

PG. 3.....SIGNAL

PG. 4.....FS

PG. 5.....HF

PG. 6.....SVM

PG. 7.....AV/YCS

PG. 8.....PIP/APT

PG. 9.....CONV

PG.10.....CONV, CONT-1, FRONT-1, PREAMP

CRT (R), CRT (G), CRT (B)

VS-45501

VS-45502

VS-45501A

VS-50501

VS-50502

VS-50502A



MODELS: VS-45501, VS-45502, VS-45502A  
VS-50501, VS-50502, VS-50502A

NOTES

- DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
- Waveforms were taken with standard color bar signal
- TP13, etc. show Test Points
- CAPACITORS

| Value                                   | Not indicated   | PF, for numbers more than 1<br>μF, for numbers less than 1  |
|---|---|---|
| Dielectric Strength                     | Not indicated : 50V   |   |
| Tolerance                               | Not indicated = ± 10%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | No tolerance is indicated for electrolytic capacitors and ± 20%<br>P = + 100%<br>- 0%<br>Q = + 30%<br>- 10%<br>R = + 200%<br>- 0%<br>S = ± 0.25PF<br>D = ± 0.5PF<br>F = ± 1PF<br>G = ± 2PF  |
| Type                                    | I<br>Parts except for chips   | Not indicated: Ceramic capacitor<br>MB : Polyester capacitor<br>PP : Polypropylene film capacitor<br>ALM : Aluminum electrolytic capacitor<br>TF : Twin film capacitor<br>SC : Semiconductor Ceramic capacitor<br>MF : Metalized paper<br>MPP : Metalized plastic film capacitor<br>MME : Metalized polyester capacitor<br>MPE : Polyester polypropylene film capacitor<br>PS : Styroil capacitor<br>TAN or TANT : Tantalum capacitor<br>+H : Electrolytic capacitor<br>NP : Non polarized electrolytic capacitor |
|   | II<br>Chips   | Not indicated : Ceramic capacitor chip<br>+H : Electrolytic capacitor<br>NP : Non polarized electrolytic capacitor chip   |
| Characteristic (only ceramic capacitor) | Not indicated<br>CH, SL, etc.   | : F or B (high dielectric percentage)<br>: Temperature compensating types   |

5. RESISTORS

| Value     |  |
|-----------|--|
| Wattage   | Parts except for chips<br>Not indicated = 1/4W or 1/6W<br>Chips<br>Not indicated = 1/10W   |
| Tolerance | Not indicated = + 5%<br>D = ± 0.5%<br>F = ± 1%   |
| Type      | I<br>Parts except for chips<br>Not indicated: Carbon resistor<br>S : Fixed composition resistor<br>MOB : Metal oxide film resistor (type B)<br>CB : Cemented resistor<br>W : Wire wound resistor<br>M : Metal film resistor<br>MPC : Metal plate cement resistor<br>ML : Metal liner resistor<br>II<br>Chip<br>Not indicated = Chip resistor |

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS  
IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL.  
DO NOT DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

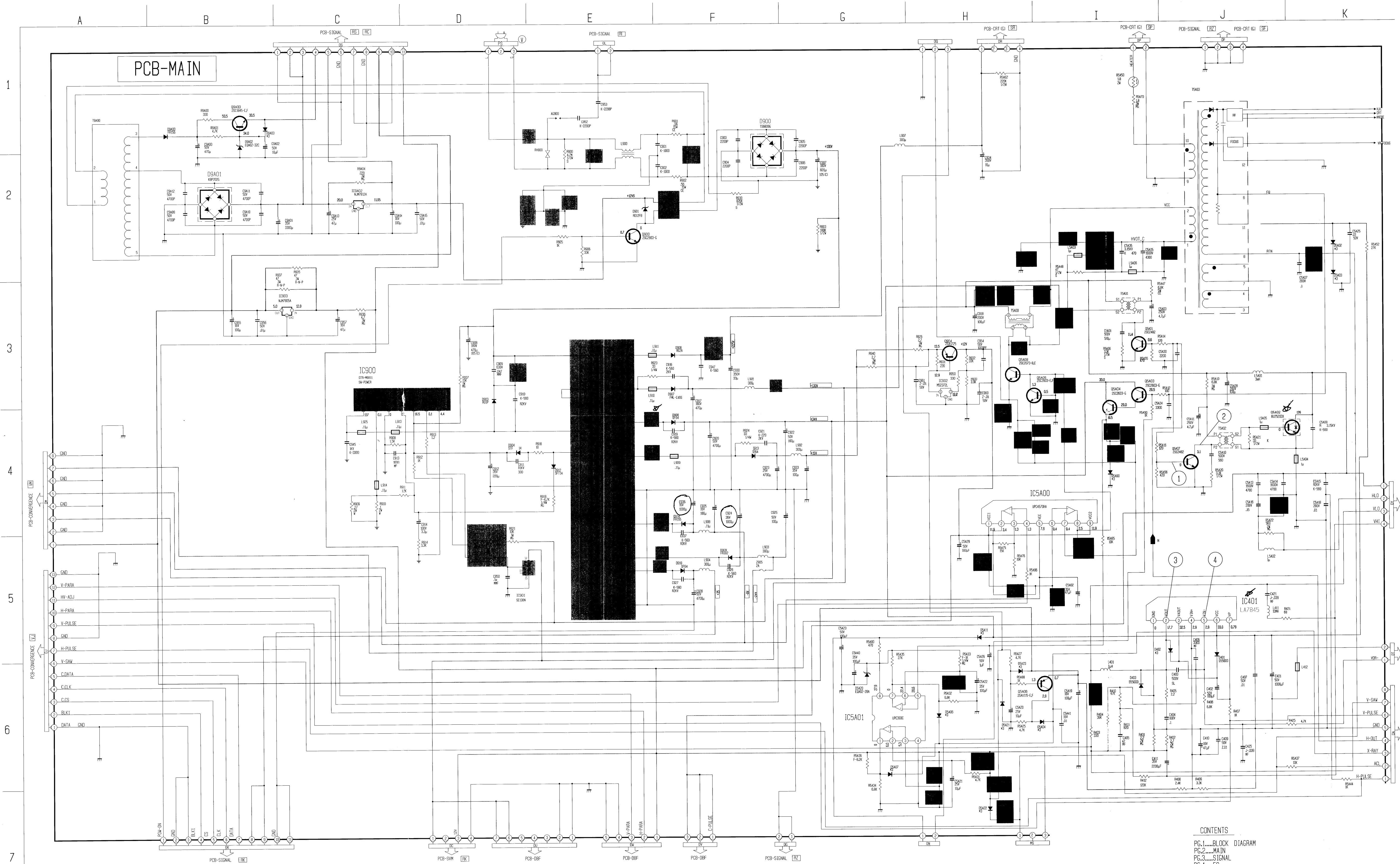
SERVICE TECHNICIAN WARNING  
X--RADIATION PRECAUTION  
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X--RADIATION PROTECTION.  
TO AVOID POSSIBLE EXPOSURE TO X--RADIATION TAKE X--RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.  
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

CONTENTS

PG. 1.....BLOCK DIAGRAM  
PG. 2.....MAIN  
PG. 3.....SIGNAL  
PG. 4.....FS  
PG. 5.....HF  
PG. 6.....SVM  
PG. 7.....AV/YCS  
PG. 8.....PIP/APT  
PG. 9.....CONV  
PG.10.....DBF, CONT-1, FRONT-1, PREAMP  
CRT (R), CRT (G), CRT (B)

VS-45501  
VS-45502  
VS-45502A  
VS-50501  
VS-50502  
VS-50502A



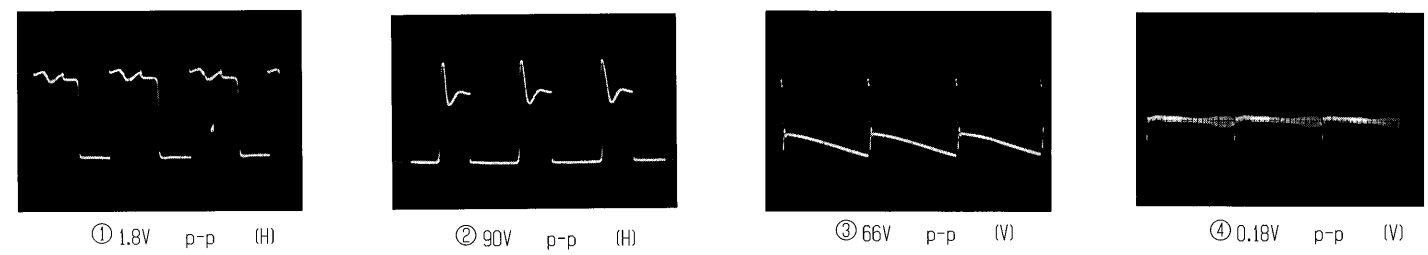


CONTENTS

|                                       |                           |
|---------------------------------------|---------------------------|
| PG.1....BLOCK                         | DIAGRAM                   |
| PG.2....MAIN                          |                           |
| PG.3....SIGNAL                        |                           |
| PG.4....FS                            |                           |
| PG.5....HF                            |                           |
| PG.6....SVM                           |                           |
| PG.7....AV/YCS                        |                           |
| PG.8....PIP/APT                       |                           |
| PG.9....CONV                          |                           |
| PG.10....DBF, CONT-1, FRONT-1, PREAMP |                           |
|                                       | CRT (R), CRT (G), CRT (B) |

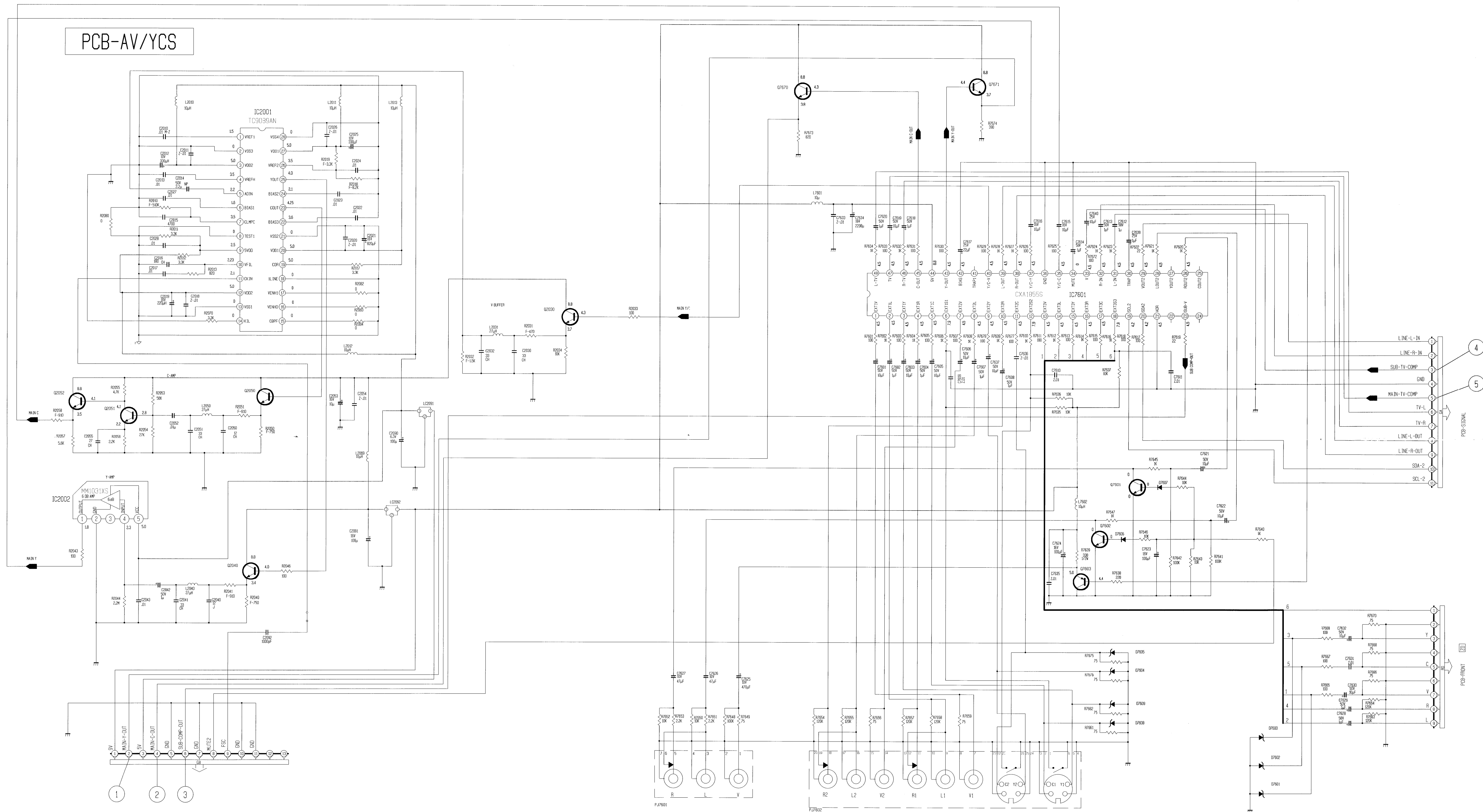
2 VS-45501  
VS-45502  
VS-45501A  
VS-50501  
VS-50502  
VS-50502A

All diodes marked K3 are 1S2076A



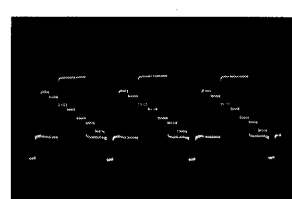


## PCB-AV/YCS



## CONTENTS

PG. 1.....BLOCK DIAGRAM  
PG. 2.....MAIN  
PG. 3.....SIGNAL  
PG. 4.....FS  
PG. 5.....HF  
PG. 6.....SVM  
PG. 7.....AV/YCS  
PG. 8.....PIP/APT  
PG. 9.....CONV  
PG.10.....DBF, CONT-1, FRONT-1, PREAMP  
CRT (R), CRT (G), CRT (B)



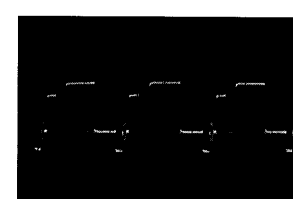
① 2.0V p-p (H)



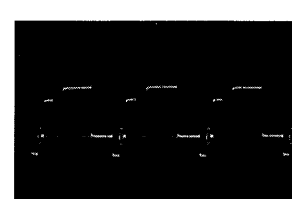
② 1.8V p-n (H)



③ 2.0V p-p (H)



④ 1.0V  $n=p$  (H)



⑤ 1.0V 500 (M)

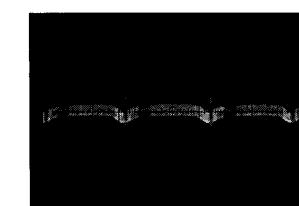
# PCB-PIP

## CONTENTS

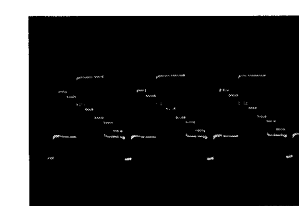
PG. 1....BLOCK DIAGRAM  
PG. 2....MAIN  
PG. 3....SIGNAL  
PG. 4....IS  
PG. 5....HF  
PG. 6....SVM  
PG. 7....AV/YCS  
PG. 8....PI/P/PT  
PG. 9....CONV  
PG.10....DBF. CONT-1, FRONT-1, PREAMP  
CRT (R), CRT (G), CRT (B)

VS-45501  
VS-45502  
VS-45501A  
VS-50501  
VS-50502  
VS-50502A

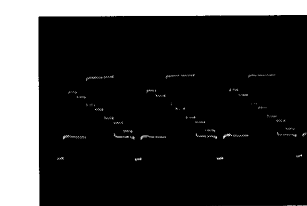
|     |                        |
|-----|------------------------|
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| PNP | 28A1115-EJ/28A8339-RS  |



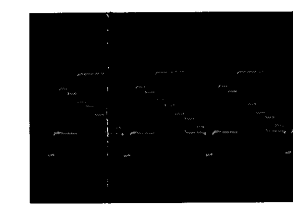
① 1.0V p-p (H)



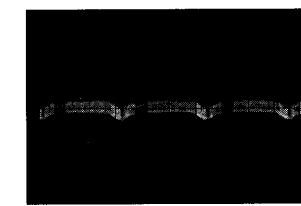
② 2.5V p-p (H)



③ 1.8V p-p (H)



④ 1.0V p-p (H)



⑤ 0.5V p-p (H)



1

2

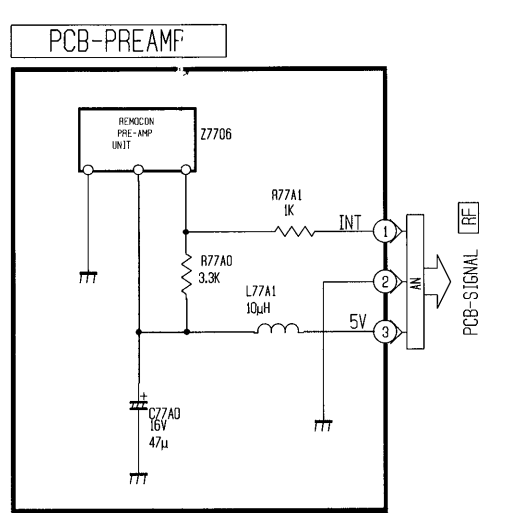
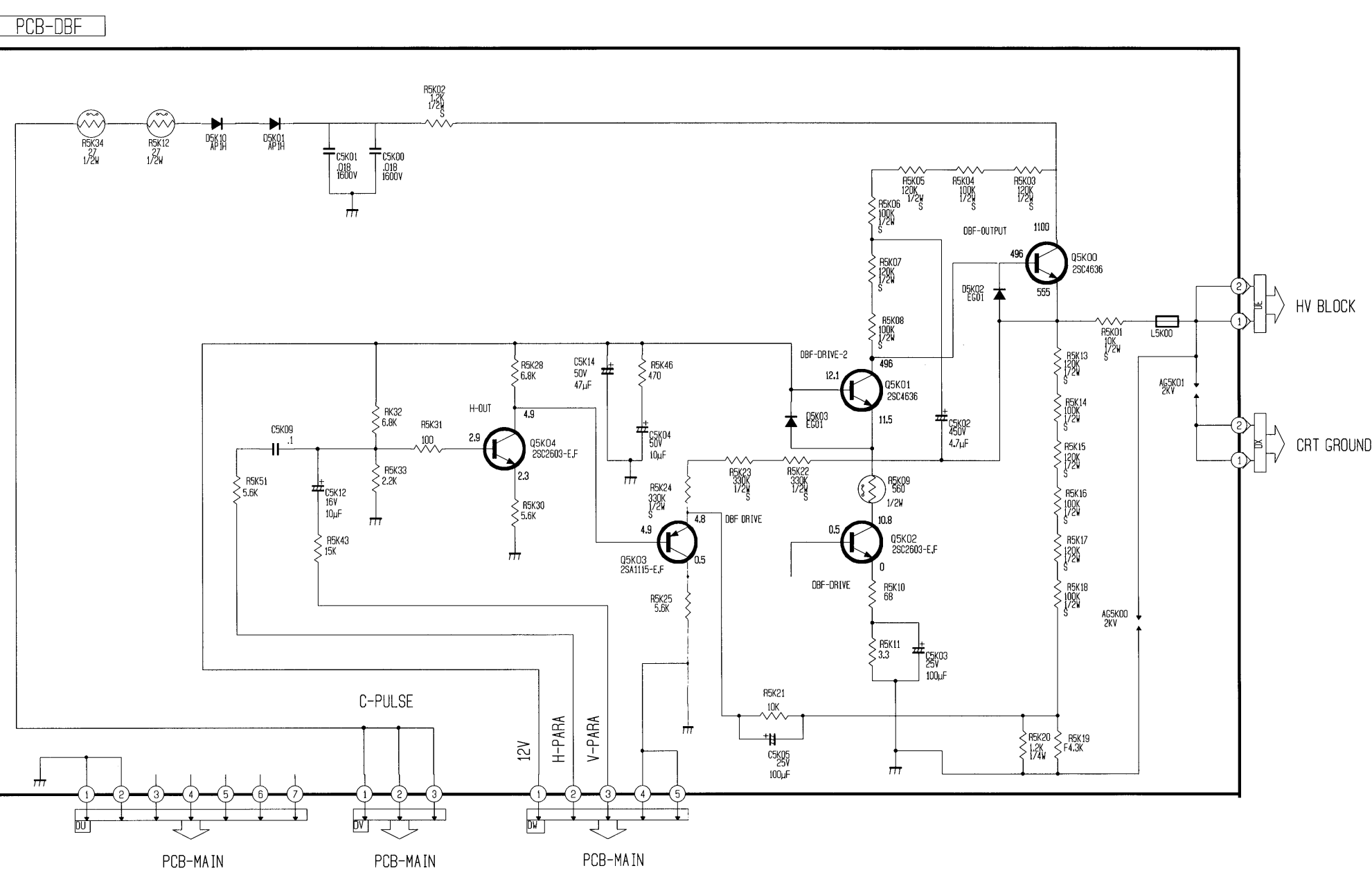
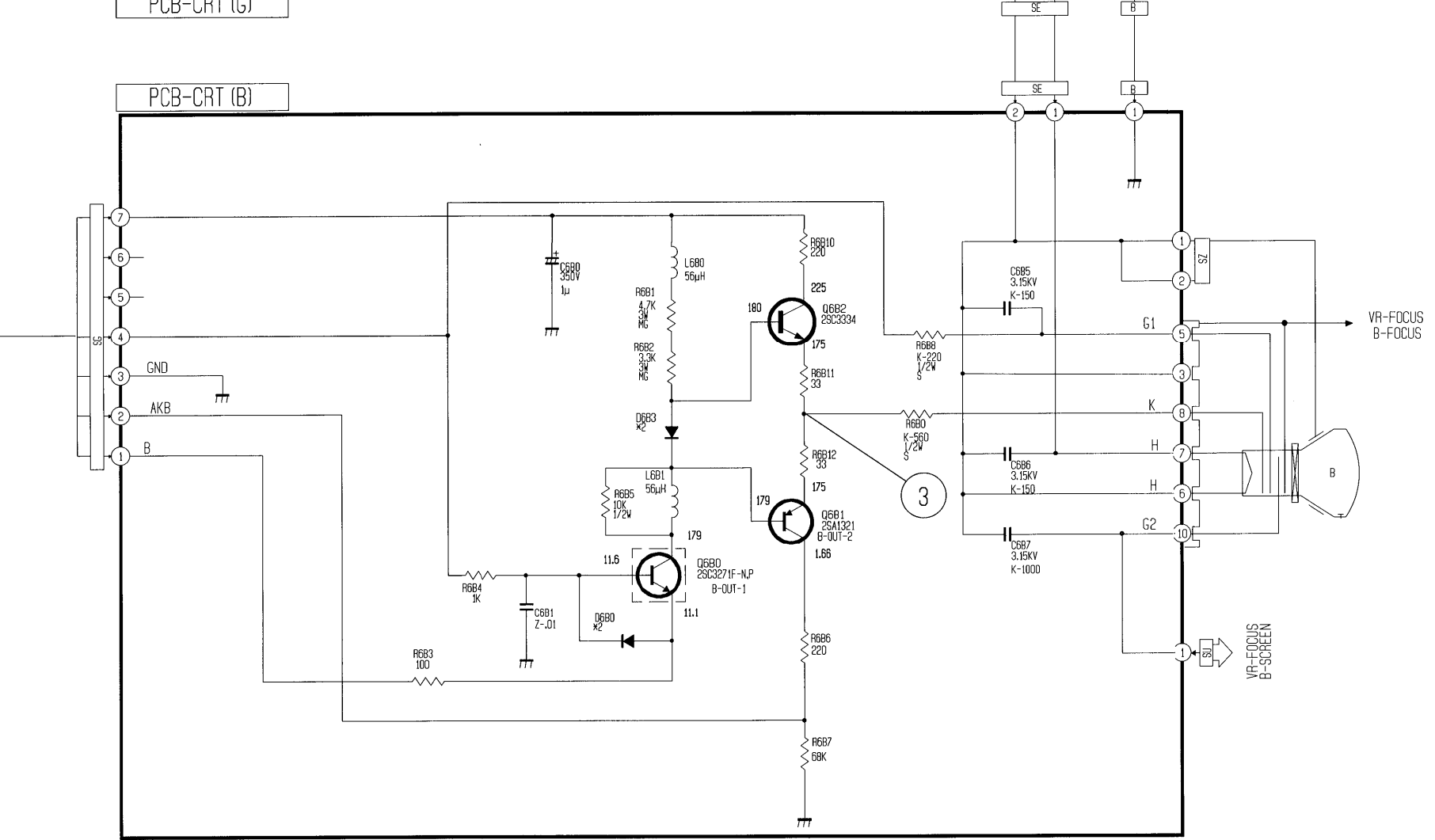
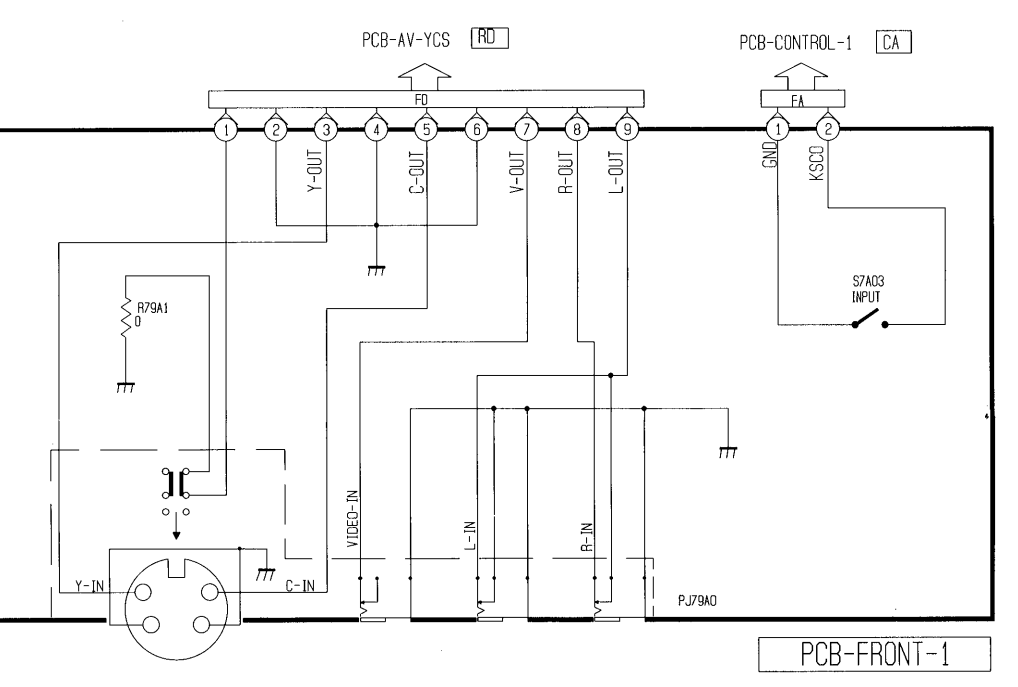
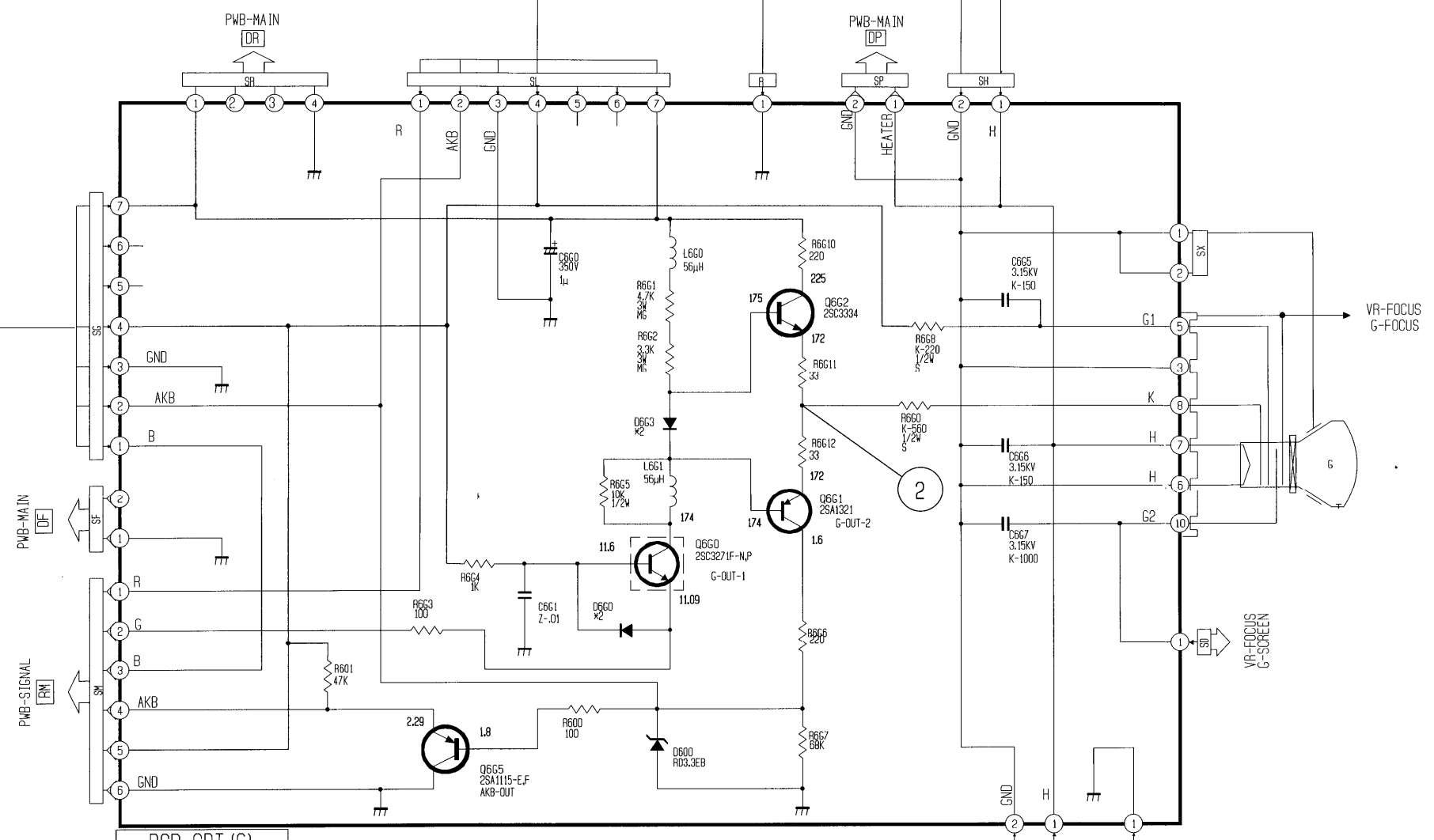
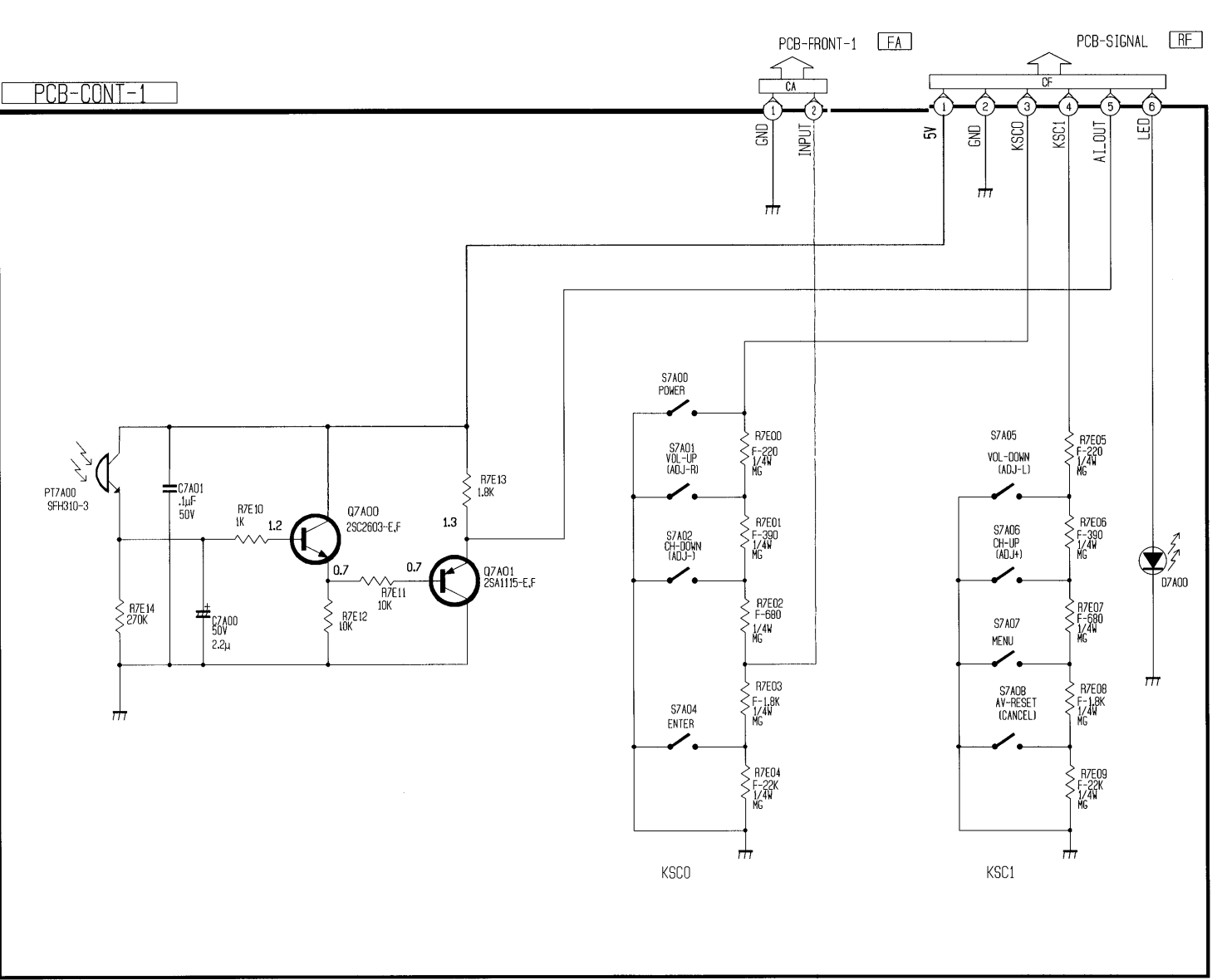
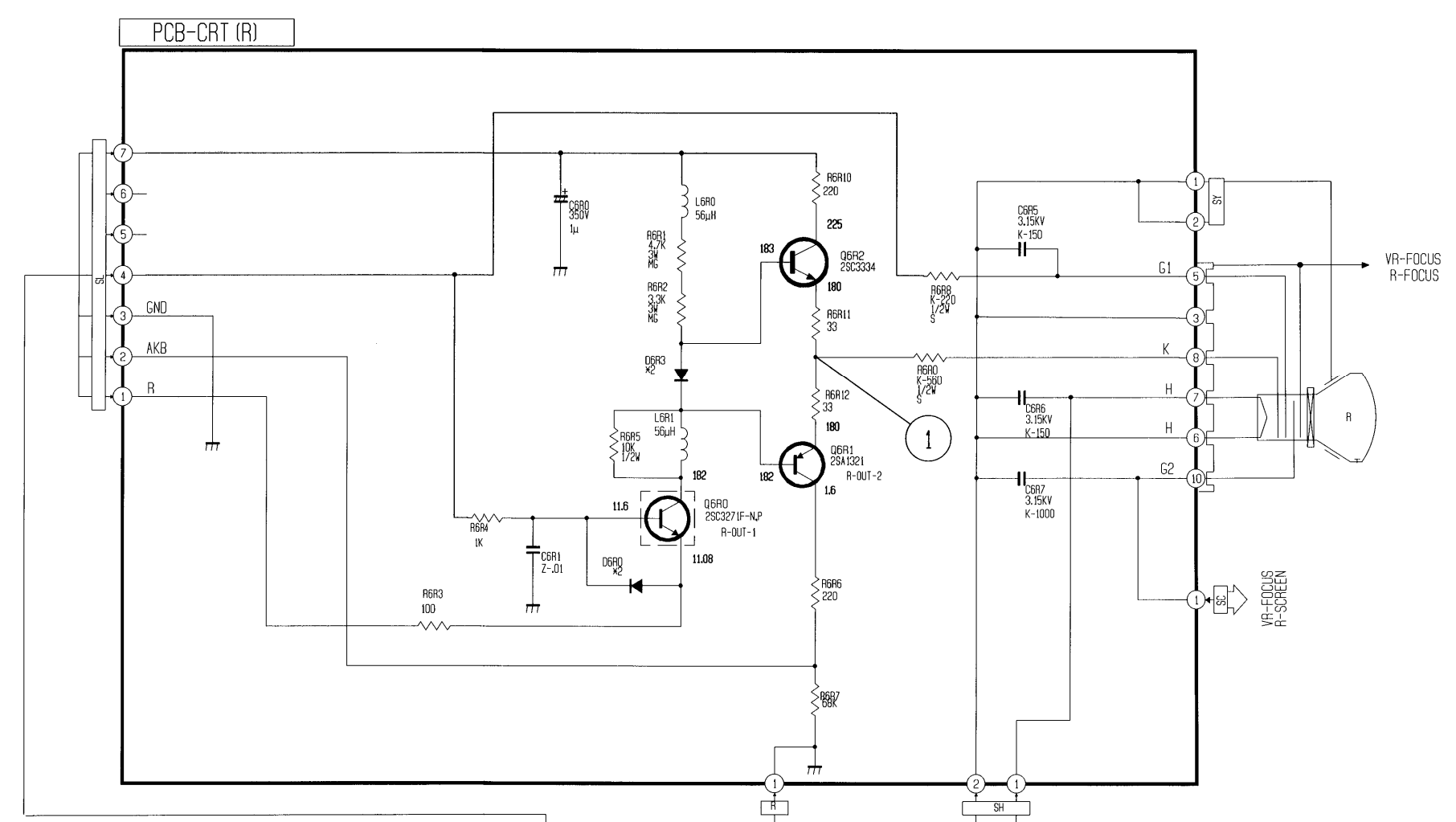
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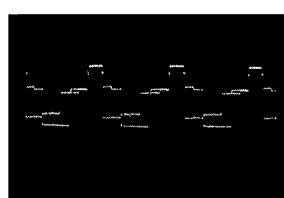
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K2: IS2070A/IS2470M

10

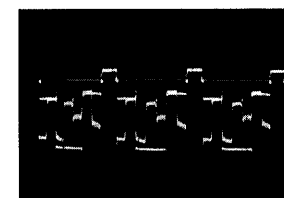
VS-45501  
VS-45502  
VS-45501A  
VS-50501  
VS-50502  
VS-50502A



① 90V p-p (H)



② 109V p-p (H)



③ 114V p-p (H)

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- PG.10....DBF, CONT-1, FRONT-1, PREAMP
- CRT (R), CRT (G), CRT (B)